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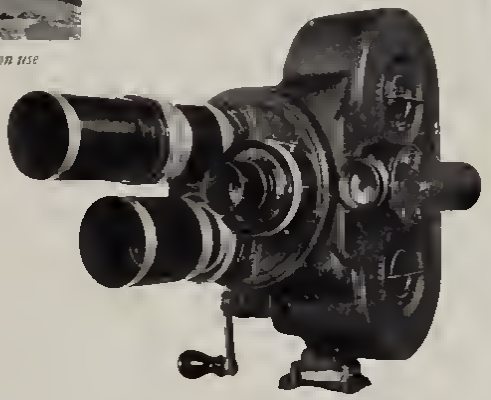
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FREE TO S



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UFFERERS!

Q Dear, Dear Doctor:
I am 26 years of age, weigh 180 lbs and am 6 feet 1 inch tall in my negligee. I have a Debria camara and baby tripod. I am hasitating about purchasing Sound Equipmant as I sutfar tarribly carrying my prasent outfit. I do commarcial worh, mostly ot flower shows and cat exhibitions. Please give me your opinion

J. (Pansy) Patt,
Crusbed Narcissus Film Laboratory.

Ans. The Doctor is forwarding his opinion under seperate cover by express.

!

Q Daar Doc:
I am 23 years old and 5 faat 4 inches tall and waigh 120 lbs. in my evercoat. I bought a sound outfit which consists of about 12 cases and weighs lass than 1000 lbs. I don't mind packing the stuft around. The only trouble is that by the time i get the stotf on the job and everything unpacked and set up to worh it is either night tima or the story is ovar. What do you suggest?

Ralph Rutf,
Big Timber Film Servica

Ans. by Dr. Tanar: Tha Tanar Single System waighs 120 lbs and is complata in two cases. It can ba sat up in two minutes even it you loaf on tha job. No stories missed with this equipment and it is mada to stand abuse.

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J. G. Doogh

Ans. by Dr. Tanar: A Tanar Double Recording Haad will work with your piasent Tanar Amplitiar and eqeipment. A cataiogua is being forwarded showing photographs ot this system. The Tanar Doabla System carries the same broad guarantee as tha Single System.

!

Q Dear Doctor.
I am soffaring from loss of business. My competitor has a Tanar Outtit and has taken all my customers. He has a Rolls-Royce and a big house on tha hill and a swell booh ot phone numbers. Ha wants to buy my camera and printer. Should I sell it to him? Piease answer this right away. Something has got to ba done. Jesse!

I M Lowe

Ans by Dr Tanar: Keep your camera and printer and gat a Tanar Single or Doabla Systam at once and get to work. You should be abla in a few weehs to buy a larger and later Rolls-Royca than your competitor has. Try to gat me a copy ot your competitor's booh ot phona nombars.

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Lower left Fig. 1, made on old-type stock. Exposure 1 second at F-8. Lower right Fig. 2, same lighting, super sensitive stock. Exposure 1/5 second at F 8. Upper right, Fig 3, old-type film. Two 1000-watt flood lights with two silks on each, and one 400-watt back light, with one oiled frost. Exposure 2 seconds at F-8. Upper left, Fig 4, same lighting, but super sensitive film. Expesure 1/5 second at F 8.

Super-Sensitive Film and the Still Man

by **EMMETT SCHOENBAUM**

THE STILL cameraman's job has never been a bed of roses, but since the introduction of super-sensitive motion picture film it has become considerably less so, for when you are using a still film which is something like sixty per cent slower than the motion picture film for which the set is lighted, you begin to encounter many new troubles in addition to all the old ones to which you've become more or less accustomed. In the first place, since your film is so vastly less sensitive than that which the cinematographers are using, and for which the set is lighted, you find yourself compelled to double or treble your normal exposure—which, heaven knows, is already quite long enough to give you trouble with movement by nervous stars, or when you are working with a large company. But then, even with this increased exposure, the difference in the sensitivity characteristics of the two emulsions is such that you will not get the same lighting effects and contrasts that the cinematographer does in his picture. Obviously, you can't relight the set just for a still!

Then, too, there is the equally important matter of color rendition. If a set is designed for the new super-sensitive motion picture film, you cannot get the same color values in your stills with the old type of still film, even though you use filters which, while improving your picture, will also force you to increase your already over-long exposure by some four or five times. And, with such glaring differences in color-rendition, your stills are almost valueless as reference materials for the art, costume, and makeup experts, or for the players themselves.

Another thing which the still man has to bear in mind in his work is that the majority of it, in addition to being of high photographic and artistic quality strictly as photographs and records, must be made for reproduction in all the countless newspapers and magazines which the Publicity Department supplies with material. This means (except in the case of a few of the very best magazines) that the still will suffer greatly in reproduction. It is somewhat as if the cinematographer had to shoot his picture with the consciousness that all but two or three of his release-prints were to be "dupes," and ranging in quality from merely poor ones to extremely bad ones. Therefore the still man has to see that his pictures are not only of the same tonal gradation and quality as is the film, but that they maintain a certain boldness of outline (for the newspapers and poorer magazines) without loss of the detail gradations and quality which the better magazines and studio use demand.

This was a considerable problem before, when the still and the motion picture could be shot on emulsions of practically identical characteristics, but now that the super-sensitive motion picture film has come into use, it is even more difficult.

But the introduction of Super-sensitive still film has not only eliminated these new difficulties, but actually reduced some of the old ones. Now you can shoot your stills, not on a film which is **approximately** like the one the cinematographer has in his camera, but on one which is **identically** the same as his film. You can use his fast film lightings unchanged and match his effects to a hair. You can shoot reference stills of sets, costumes, and makeups which will perfectly match the color rendition and tonal gradations of his moving picture. And you can make your stills with the requisite boldness for reproduction work, and at the same time get such fine detail contrasts, and luminous shadows as never before.

I have just finished shooting the stills for Pathe's production of "The Common Law," starring Constance Bennett, directed by Paul L. Stein, and photographed by Hal Mohr, A. S. C. Mr. Mohr used super-sensitive film for this production, while I started it with ordinary Panchromatic cut film. But I soon enough found that the only way to match Mr. Mohr's cinematographic results with my stills was to change over to Super Sensitive still film! During the first three days of the production, the tremendous differences between the fast film which Mr. Mohr was using and the slow film that I was using gave me an endless amount of trouble—and the fourth morning found me with Super Sensitive cut film in my plate-holders. From then on, I was not only able to hold up my end of things properly, but to produce stills of a better quality than anything I had ever done on the older stocks. And the immensely shortened exposures, and equally improved quality were quite as welcome to both director and star as they were to Mr. Mohr and myself.

Perhaps the most significant quality which I found in the new film—aside from its speed—was the improvement in color rendition. It reproduces colors in almost the exact scale of relative brilliancy with which they appear to the eye. This has a really startling effect upon the perspective; it gives a far greater illusion of depth and roundness. This is highly important in still work, for a still, probably because of its lack of motion, almost invariably seems flatter than its corresponding motion picture. Thus, working with the new film in both the motion picture and still cameras, we can be sure of making full use of all the visual aids to securing proper depth and perspective which the set-designers have given us, by means of the coloring of the sets and backings.

(Continued on page 29)



Hal Mohr and Mr. Schoenbaum comparing old and new film results. This picture was made with one 1000-watt light. Lens stopped to F 16, exposure 1/5 second.

Society of Motion Picture E

Spring Convention One of Most Interesting in History of En

by HAL H

AFTER listening to the reading of sixty-eight papers prepared by some of the most outstanding minds of the technical field of motion pictures, this writer hesitates to even attempt to report the Spring Meeting of the Society of Motion Picture Engineers, held in Hollywood the last week of May—May 25th to 29th, inclusive, to be exact

It is too much to expect one small mind to grasp so much technical data and digest it well enough to more than touch upon what took place At the outset, we do wish to say that a meeting such as this gives us the reason why America leads in the motion picture production of the entire world These men live and breathe the problems of the technical side of the industry and most of them are devoting their lives to the advancement of the science of picture making along lines which seldom come to the attention of the millions of theatre patrons who rarely, if ever, give a thought to the mechanical wonders that make pictures possible

But, to get back to the meeting It was held in the beautiful building of the Hollywood Legion, very adequate quarters for the purpose Buron Fitts, District Attorney of Los Angeles County; Clinton Wunder, Executive Manager of the Academy of Motion Picture Arts and Sciences, and Commander Stephen Hall of the Hollywood Post 43, American Legion, gave addresses of welcome to which President J I. Crabtree responded Following the usual organization details, the meeting swung into the business of the presentation of the papers The first was a paper on 'Detail in Television' by D K Gannett of the American Telephone and Telegraph Company This was followed by the showing of the famous "Baron Shiba Films" These films created much interest They were made in Japan at very high speed, and were projected so as to show in slow motion certain very high speed phenomena One of the most interesting features of the meeting

Frank P Brackett, Director of Brackett Observatory, Pomona College, then presented a paper on "Sound Pictures in the Solution of Eclipse Problems," which was of unusual interest This was followed by a paper on Reversing the Form and Inclination of the Motion Picture Theatre Floor for Improvement in Vision," by Ben Schlanger of New York Mr Schlanger advocated that theatres be constructed so that the back of the theatre floor would be lower than the front He declared that more ease of vision could be secured if we look up at the screen instead of down as the present design of the theatres forces us to do C J North and N D Golden of the Motion Picture Division, Bureau of Commerce, Washington, D C, then gave a paper on "The Latin-American Audience Viewpoint to American Films," which brought out the fact that these countries want our box office personalities, even though they may be speaking English—providing titles in Spanish make the action clear It was pointed out that Spanish versions with unknown players are not so popular

In the afternoon of the first day Dr C E K Mees, Director of the Research Laboratory of the Eastman Kodak Company, presided at a symposium on Color Photography At this symposium J A Ball gave a paper on "Technicolor", R M Otis read one on "Multicolor Process", Bruce Burns presented another on the Multicolor Laboratory; W V D Kelley talked for fifteen minutes on the "Handschiegl Color Process", and Custav Brock presented a paper on "Hand Coloring of Motion Picture Film" in which he dealt with the advantages of selective hand coloring, and gave a description of the equipment used

Following the color discussion, G S Mitchell gave a paper on "Making Motion Pictures in Asiatic Jungles," which was of unusual merit and interest H E Edgerton of the Massachusetts Institute of Technology read a paper on "The Mercury Arc as a Source of Intermittent Light" Mr. Edgerton pointed out the possibility of the use of intense intermittent light for moving pictures and special photography and reviewed the limitations of sources of intermittent light He showed that the characteristics of mercury-arc thyratron that are advantageous for flashing intermittent light are namely 1, The light is photographically actinic. 2, The duration of a light flash can be made less than ten microseconds 3, The light intensity is high 4, The frequency of flash is easily and accurately controlled by means of a grid

On Tuesday, May 26, the morning session was devoted to a symposium on Sound Recording, presided over by Colonel Nugent Slaughter, Chief Engineer of Warner Brothers Studios E. W Kellogg and C N Batsel of R-C-A Victor Company, gave a paper on "A Shutter for Ground Noise Reduction" This was followed by a paper by Barton Kreuzer of R-C-A Photophone on "Noise Reduction with Variable Area Recording," which dealt with the methods of accomplishing noise reduction, together with the factors influencing equipment design An analysis of circuit operation was also provided "Time Constants" of the apparatus were covered and a complete description given

J I Kuhn next followed with a paper on "A Sound Re-recording Machine" described as a machine suitable for studios using either variable area or variable density methods of recording It employs a novel type of film aperture and a new method of focusing the sound lamp Carl Dreher, always interesting, read a paper next on "Recording, Re-recording and Editing Sound Film" Mr Dreher is chief of sound at the R-K-O studios, Hollywood Next came a paper on "Recording Sound for Split Mat Photography, ' by L E Clark of the Pathe Studios He dealt with the problems which arose at one studio as a result of the use of double exposure photography, and the methods, more practical than scientific, which were developed to meet the needs

L D Grignon of the Paramount Studios, then read a paper on "Operating Problems of Recording Equipment" in which he treated briefly the organization of a sound department, and followed with much information gained from experience relative to the maintenance of the studio sound equipment It was highly enlightening "Recording on Sound Stages with Portable Units" by Charles Felstead, of Universal, was the next paper Merritt Crawford closed the morning session with a paper on "Pioneer Experiments of Eugene Lauste in Recording Sound," which was one of the most interesting papers of the morning

Dr L A Jones of the Eastman Kodak Company, opened the afternoon session with Part 1 of a three-part paper on "Sensitometry," which was one of the most exhaustive and ambitious papers presented at the meeting, and which was handled as only Dr. Jones can do it D. R White of the

ngineers Hollywood Meeting

neering Organization. Sixty-Eight Technical Papers Presented.

HALL

DuPont-Pathe Film Manufacturing Company, next presented a paper on "Characteristics of DuPont Panchromatic Negative Film" which was of general interest and ably handled Emery Huse of the Hollywood Laboratory of the Eastman Kodak Company, then read a paper on "Characteristics of the New Eastman Negative Film" Mr Huse's paper was followed by Fred Westerberg, A S C, of Hollywood, who presented a paper on "Standardization of the Picture Aperture and the Camera Motor—a Needed Development" A very comprehensive paper from a practical cameraman Friend Baker, of Hollywood, then read a paper on "A New Auxiliary Finder" This was followed by a paper from Ira Hoke, another Hollywood Cinematographer, on "The Camera of Tomorrow" L W Physioc, also a Hollywood Cinematographer, then presented a paper on "Problems of the Cameraman," which was of much interest

Wednesday morning was devoted to a symposium on Studio Practises Hans Drier of Paramount gave a paper on "Miniature Models of Sets" which was both instructive and interesting and well prepared "Use of Dialogue in Sound," by Colonel Joy of the Producers Association, was next This was followed by an extremely interesting and somewhat technical paper on "The Depth of Field of Camera Lenses," by A C Hardy of the Massachusetts Institute of Technology "Making a Motion Picture," by W C Harcus of Paramount, followed This, together with informal discussions comprised the activities of the day

In the evening, the semi-annual banquet was held at the Hotel Roosevelt, with one of the biggest gatherings in years on hand, including many of the outstanding players and directors and executives of the picture world

Thursday morning session was devoted to a symposium on Laboratory Practises, presided over by Dr V B Sease, Director of the Redpath Laboratory, DuPont-Pathe Film Manufacturing Company Dr Jones read the final part of his paper on "Sensitometry" This was followed by a paper on "The Effect of Exposure and Development on the Quality of Variable Area Photographic Sound Recording," by Donald Foster of the Bell Telephone Laboratories, a paper of extreme merit and highly technical This was followed by a paper from G L Dimmick of R-C-A Victor Company, on "The Study of Exposure and Film Processing for Variable Area Recording"

W P Bielicke of R-K-O Studios, then read a paper on "The Processing of Variable Area Sound Records in the Film Laboratory" This paper discussed from a practical standpoint the commercial methods of developing and printing variable area sound film An effective method of processing sound film must produce the optimum values that have been determined in theory, according to the paper, the problem being to obtain these values in commercial laboratory practise where larger quantities of film are processed

Roy Hunter of Universal then presented a paper on "Universal Developing Machines," describing them and their work in detail The next paper was by J I Crabtree and L E Muehler of the Eastman Kodak Company It was on "Reducing and Intensifying Solutions for Motion Picture Film" The authors pointed out that it is possible to correct for errors of exposure and development with incorrectly processed images on motion picture negative and positive film by either adding an opaque substance to the image which is known as "intensification," or by removing silver therefrom which is known as "reduction," or by a combination of the two processes

The properties of a large number of known intensifying and reducing solutions have been studied in detail to determine formulas suitable for use with motion picture film

For intensification, the chromium, Monckhoven (mercury), and silver intensifiers were the most satisfactory The Monckhoven intensifier is useful for extreme intensification where permanence is not essential and the chromium intensifier is suitable for negatives where a medium increase in contrast is desirable The degree of intensification may be controlled within limits by a variation of the time of redevelopment For



Pres. J. I. Crabtree

negatives and projection prints, intensification with silver has been found to give strictly neutral images and the process permits of easy control of the degree of intensification So far as is known both the chromium and the silver intensified images are stable

For subtractive reduction such as in the case of overexposures or fogged images, the use of either 11) a two-bath formula comprising separate solutions of potassium ferricyanide and sodium thiosulfate, or 12) a modification of the Belitzski reducer is suitable Where proportional reduction is required, a solution containing ferric ammonium sulfate with sulfuric acid is recommended

It has been found that the above methods of intensification and reduction are applicable to sound film with the possible exception of subtractive reduction which, by virtue of the lowering of resolving power, causes a loss of high frequencies.

A paper on "Improvements in Motion Picture Laboratory Apparatus," by C E Ives, A J Miller and J I Crabtree of the Eastman Kodak Company, was next presented This paper pointed out that the increased entertainment value of the modern motion picture is due in a considerable degree to the elimination of spots, scratches, and unevenness in the film This achievement is a result of continuous effort on the part of the laboratories to improve their methods and equipment One problem which the laboratory supervisor has always to face is that of securing a definite degree of development and a uniform exposure control in printing

(Continued on page 26)

A Non-Intermittent Camera

by **WILLIAM STULL, A. S. C.**

IT IS no longer safe for anyone who would be considered an expert on motion picture technology to brand anything as "utterly impossible," for if he does he is very likely to wake up one morning and find that some enterprising engineer has made his impossibility an accomplished fact Color, sound, silent camera-movements, machine development, and may other equally difficult engineering accomplishments have so recently blossomed into fact as to convince one that the life of a cinema engineer must be dedicated to the assault of the highly improbable But one last fortress has remained to the skeptic the non-intermittent camera That, at least, was and would always remain an impossibility! From the very inception of the cinematograph, the intermittent movement of the film past the aperture has been held to be one of the basic principles of the moving picture It was in fact, one of the cornerstones of the power of the once mighty "Film Trust"—the great Motion Picture Patents Company, and although necessity is reputedly the mother of invention, neither this necessity nor the efforts of scores of earnest workers brought forth a practical non-intermittent camera Therefore said the wise ones, such a camera is an absolute impossibility!

Of course it must be admitted, more than a few physicists have evolved means of making cinematographic records of ultra-high-frequency electrical discharges, using the discharge for both subject, illuminant, and shutter but none of these were more than laboratory experiments, and totally incapable of photographing normal action on a set Therefore, in truth, the non-intermittent camera must be an impossibility!

But is it?

At a recent meeting of the American Society of Cinematographers very conclusive evidence to the contrary—in the form of a practical, non-intermittent camera, and successful films made therewith—was presented

And another theory was exploded!

The inventor of this new camera is Senor Gabriel Garcia Moreno, lately a successful banker of Mexico City, Mexico, but for the past two years a member of Hollywood's cinetechnical colony Although Senor Moreno's vocation was banking, his lifelong avocation has been the design and construction of optical and cinematographic machinery, and when once he had, in his Mexican laboratory, evolved the principles upon which his new camera is constructed, he came to Hollywood to perfect and manufacture the camera itself With him in his firm he has had the good fortune to associate Mr Silas E. Snyder, long and favorably known to cinematographers as the Editor first of The American Cinematographer, and, more recently, of the International Photographer, and Mr William G Fairbank, a capitalist and organizer of great ability And under the combined efforts of these three, the new Moreno-Snyder Continuous Camera has become a fact

It is vastly surprising that so considerable a degree of success as has been theirs has come in so short a time, for, beyond the single, basic fact that the camera makes a motion picture upon conventional film by means of a conventional lens, everything about the camera is new, not only in design, but in principle. There have been, and still are, difficulties encountered in minor details, but the demonstration given the A S C was sufficient to prove that, whatever minor defects may exist (and, incidentally, many of these have since been overcome!), the principle is correct, and non-intermittent cinematography is within the range of commercial probability That, as Mr Coolidge is wont to remark, is progress!

Surprisingly enough, the camera is not, externally, greatly unlike the conventional studio apparatus The same general layout of essential units is noticeable But within, the camera is unlike any piece of cinemachinery extant Perhaps the first point that is noticed is that the film apparently travels **backwards** It passes from the righthand, or rear magazine, through an astonishing series of loops in the camera-mechanism, and feeds into the left-hand, or front magazine, where it is spooled with the emulsion side turned **in**, quite reversing normal practice

But a second glance reveals a surprising simplicity in the film-motivating apparatus there are but four moving parts! The film passes over a conventional master-sprocket, past a small, continuously-revolving feed-sprocket **upwards** through a roller-tensioned aperture-plate (which is so proportioned that black-and-white, bi-pack or even tri-pack color-processes may be used interchangeably), over another small, continuously-revolving take-up sprocket, and into the magazine. These three sprockets and an ingenious, revolving lens-wheel, which rotates about them, and is on the same shaft as the master-sprocket, are the sole moving parts of the camera This lens-wheel, or optical shutter, is the heart of the camera It consists of an octagonal, steel plate rigidly affixed upon the main-shaft of the camera, and bearing on its outer edge—and at right angles thereto—eight rectangular, plano-concave lenses, which supplement the regular lens of the camera, and, moving with the film, rectify the continuous movement thereof, and effect a steady, motionless image upon each frame These lenses, or prisms, are specially ground to Senor Moreno's formula, are perfectly matched, and are immoveably set in their places by both mechanical clamps and cement It is possible to break one of these prism-units, but not to get it out of alignment And in case of breakage, the damaged unit can be removed from the wheel, and replaced, with perfect assurance that the accuracy of the camera will be unaffected as the lens-wheels are assembled upon a single optical machine of Senor Moreno's design, which, it is stated, sets these lenses in place with an accuracy of less than .00001"

However, since this camera has no true shutter, the cinematographer may well begin to ask, about this time, how is the exposure to be controlled? There are times when one can neither reduce the lens-stop nor use neutral-density filters how, in such cases can you then reduce your exposure, with no shutter to manipulate? Senor Moreno's answer has been by fitting his aperture with a variable slit, not unlike those used on certain continuous printers, and which is controlled from without The dial upon which the controller for this slit operates is graduated to read in equivalent shutter-openings, from 360° to 0°; therefore this device need cause the user no concern Furthermore, it is geared so that it may be used to produce camera dissolves, quite as conveniently and effectively as the familiar dissolving shutter of a conventional camera From the unusually large extreme aperture indicated —360°—it may be imagined that a tremendous range of exposure is possible, but this only tells half the story, for the continuous movement of the film and the absence of any shutter increase this amazingly At the standard recording-speed of 90 feet per minute, and a shutter-aperture of 170°, the conventional camera gives an equivalent exposure of 1/48 second, while, at the same film-speed, but with its maximum "shutter-opening," this camera gives an exposure of 1/24 second

(Continued on page 21)

New Angles on Fast Film

by **CLYDE DE VINNA, A. S. C.**

THERE was a time, not so long ago, when a cinematographer felt himself bound to look askance at new technical developments in his craft for fear that they might in some way lead to expensive photographic failures and the dreaded retakes Fortunately, that day is past, the progressive cinematographer of today has confidence both in the research laboratories of the manufacturers from whence come these innovations, and in his own ability to successfully adapt his technique to the requirements of any improved process or equipment which may come his way

So it is, then, that instead of being beset by fears and doubts of the newly introduced Super Sensitive Films, most cinematographers thought only of finding out just how and where their work and methods of work could be bettered by the use of the new products This is quite as it should be, for unless a cinematographer has this confidence in a product, he should not use it, and unless he has the same complete confidence in his own ability, he should never undertake the photographic direction of a picture

Therefore, the question in our minds today is not "Will fast film hurt our work?" but, "Where will the use of fast film help our work?"

From my own experience with this new film, both in exhaustive tests of every type, and in actual production, it seems to me that it is almost impossible to say just where the new film will **not** be beneficial, for its possibilities seem all but unlimited I believe that, in one way or another, everyone in the company from the Supervisor down, is benefited by its use This is no idle statement, for during the production of my present picture, "Politics," I have asked the opinions of many representative members of the troupe, and all are agreed that the new film does, in many ways, directly benefit them

The first person to whom I addressed my query was the Supervisor, Paul Bern He replied very positively that it was a great help to him ' It is not so much," he said, "the monetary saving resulting from the lower electrical consumption on the set which interests me That is important enough, of course, but no producer will quibble over a few hundred, or even a few thousand amperes more or less if he knows that the artistry of his cinematographer is going to suffer because of it But, as I have watched the 'rushes' of this picture I have constantly noted the new artistic opportunities that the new film has given you, Clyde, in your photography The picture is a comedy-drama, and as such it presents an entirely different artistic problem from such of your recent films as 'White Shadows' and 'Trader Horn', but I have noticed—and marvelled at—the way this new film has enabled you to use dramatic lighting-effects without sacrificing the perfect overall definition that a comedy requires I don t believe that the old film could have done it, for the older film, a picture was photographically, either a drama or a comedy, but you and the new film have combined to make this film a real comedy-drama—a comedy with dramatic cinematography—and the first of its kind And to my mind, this artistic achievement is far more important than the saving in lighting which the cost sheets tell me you've also made "

The next persons to whom I addressed this inquiry were the two stars of the piece, Marie Dressler and Polly Moran They, too, were equally enthusiastic Miss Dressler's verdict was characteristically positive ' Of course, I'm not a photographer, Clyde, so I can't judge the photography as you would, though I've noticed that the photography you've gotten with this new film is much clearer than ever before, and at the same time softer and more natural But what has impressed me most is a detail that you people who work on the other side of the cameras never think about— that it is tremendously more comfortable to act for this new film than it was for the old— You people across the camera-lines never have to go through the discomfort we actors do, in rehearsing, rehearsing, and again rehearsing under those hot lights, and then of making take after take of each scene, still broiling away under your big lights But now that you've started using this new film, you don't have to use nearly so many lights, I notice, and, since the few you do use are much smaller, it makes a tremendous difference in our comfort And since we actors are more comfortable on the set now we can give our best thought and energy to our work, rather than to the problem of trying to keep half-way comfortable under those darned lights That way, we can do more work with less fatigue, perhaps the best way I can demonstrate that is through my own experience You know that under the big lights we had to use for the old film, I tired very easily, in spite of all that every member of the troupe did to make things easy for me—and by the middle of the afternoon I was always fagged out, and had to quit and go home to rest, But, with the fewer, smaller lights you use for this new film, there's nothing except the actual work itself (which I like!), to tire me I don't mind rehearsing under the lights, and I'm good for as long a day's work as any of the rest of you "

Miss Moran was equally enthusiastic "You know more about the photography of it than I do, Clyde," she said, "but Marie and I know more about the comfort of working with this new film than any cameraman ever could! Working under those hot lights, we had a thousand unpleasant thing always distracting our minds from what we were doing —wondering what the heat would do to our makeup, if it would make it run, if the perspiration would show through, and a lot of other things all centering around the big question of 'when will that darned cameraman let us out of this oven for a breath of air?' But now it's different· we can feel like human beings no matter how long you and the director keep us under the lights. We're cool and comfortable, and don't have to worry about anything except what we're doing with our parts Believe me, if anyone is looking for a real, old fashioned fight, just let him try and switch back to the old film for my next picture!"

Soon after that, I asked the director, 'Chuck" Reisner, what he thought of the new film He, too, liked it, but for still another reason "I'm not afraid that you'll fall down on photography, Clyde," he told me, 'no matter what sort of film you use Photography is your business, just as direction is mine—and neither of us would be here if he didn't know how to deliver the goods But, after all, we're here simply to make it possible for the actors to tell their story to the audiences In the final analysis, that's why everyone on the lot, from Mr Mayer down to the gateman, is here So it's up to us to make it possible for our players to do their work, to tell their story, just as easily and perfectly as possible That's what I'm aiming for in my direction, and what you're aiming for in your photography And everything that will help us to do this is just so much to the good This new

(Continued on page 22)

Screen Definition

by **DR. L. M. DIETERICH**
Consulting Engineer

Part VII.

IN THE issue of September 1930 of the "International Photographer" the author analyzed in Part II of the article "Screen Characteristics and Natural Vision" screen-depth effects from the scientific-artistic and psychological points of view relating especially to mono-lens and bi-lens photographic results and to monocular and binocular vision as well as their correlated screen effect possibilities

It is the object of this article to analyze the optical possibilities in lens design to more closely approach with standard lens performance the effects of nature upon the human optical organs

The author desires to emphasize again that the term "stereoscopic", especially as far as motion pictures are concerned, is in this industry almost universally misunderstood, not only as far as describing an optical problem of practical possibilities, but also as a problem which it would be desirable to solve

It must be fundamentally understood that there is an elementary difference between the perceptible record or visual impression upon the retina of the human eye and the actinic record upon a light sensitive, usually plano-surface

In both monocular and binocular vision and photographic records produced by stationary single or multiple lenses only such objects coincide or register a single picture which are of a given distance from both human or artificial optical systems

This distance, usually called the plane of sharpness, is actually a spherical surface, the center of which is the optical center of either eye or lens and the radius of which corresponds to the momentary focal value of either of them

Any objects lying closer or farther away produce in both cases double images

This can be easily demonstrated for the human optical system by holding for example two pencils, say 6" and 12" away from the eyes, parallel and upright Looking at the nearer one sharply, the farther one will clearly show double and vice versa

Taking any photographic lens on the other hand and covering same with the exception of two horizontally and diametrically opposed circular holes (double aperture), objects "in focus" will appear as well defined "single" picture records whereas all objects nearer or farther away will appear double

In natural vision the focus of the eye, however, changes continually as we scan the field before us and by the effects of persistence of vision, the sharp single picture impressions predominate, whereas the fleeting, unsharp, blurred double images are psychologically suppressed with the result of a mental perception of all objects in view in even, though not needlesharp, but soft definition

In lens records produced with a double aperture lens, however, only object points "in focus" appear as a sharp and single record, whereas all other object points produce double indelible records, the duplex effect increasing with the distance of these points from the so-called plane of sharpness

These demonstrative proofs have only been related to horizontal separation of images, as the human eye ranges predominantly horizontally and as the double aperture has been considered in horizontal direction only As we, however, progress in this analysis we find that the single human eye as well as the uncovered single photographic lens have these image separation or double image effects not only in a horizontal but also in a vertical or any angular direction For human vision this can be proved by tilting the two pencils from vertical to horizontal or intermediate position and for a photographic lens by rotating the two aperture mats before the lens into any angular position before taking a record

If we now take a photograph with an uncovered lens the result is similar to that by taking a photograph with a mat with a diagonal slit and rotating such mat for 180° during one exposure A picture is produced with objects "in focus" sharp and with each object point "out of focus" composed of double images in all directions, thereby forming for each such point a circle, commonly called a circle of confusion, which increases with the distance of such point from the "plane of sharpness" and with an increasing unsharpness thereby producing the well known out of focus effect.

The same result impresses itself in natural vision momentarily upon the retina of the eye, but as above explained, the momentary out of focus effects are during the continuous and instantaneous changes of focus suppressed and replaced by the sharp single impressions of all the points in the field By the action of the persistence of vision, however, the sharp and unsharp impressions result in the "soft" picture we see and which cameramen continually try to approach by use of filters, diffusion discs, gauzes, special light control, etc

In binocular vision a circle of confusion is produced by each eye and blended by the human optical system into an approximately elliptical image with the long axis in line with the parallax of the human eyes, usually in a horizontal direction The nerve reaction produces a final perception of the object as if perceived from the two foci of this ellipse blended together into "one" soft image

By using a double lens camera with a horizontal lens separation, the indelible circles of confusion enlarge and separate in a horizontal direction, the doubling or blurring effect increases and is not suppressed by any "in focus" images

An increasing lack of registration results and if such an image is looked upon, the human optical system cannot correct this duplication by change of focus and correlated suppression, because the distorted picture lies in one plane (the surface of the photograph)

This distinctly double impression of the same object point on one surface can only be blended into one nerve picture by additional optical means so as to prevent the left lens picture to be seen by the right eye and vice versa

By taking a separate photograph with each lens as a basis, a number of methods or means have been developed for the above purpose

All of these so-called stereoscopic photographs, when viewed through and by specific optical means produce an approach to natural vision but only for a specific predetermined focal distance and of a so far visually and practically unsatisfactory degree of satisfaction as far as motion pictures are concerned

In the next installment some of these endeavors shall be explained and analyzed

The New Eastman Sensitometer

by **EMERY HUSE, A. S. C.**
West Coast Division Motion Picture Film Department Eastman Kodak Company

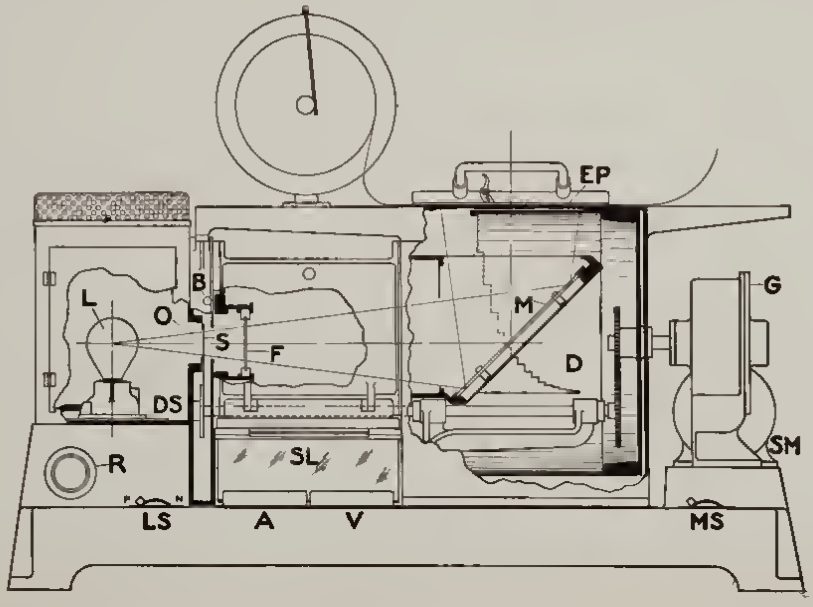
THE TECHNICAL branch of the motion picture industry has needed, particularly since the inception of sound photography, a standardized method of sensitometry That phase of sensitometry which needs the most attention from the standpoint of standardization, is the instrument on which the initial exposures are made, namely, the sensitometer itself Up to the present time there has been no instrument available on the open market which could by any means be considered a standard The Eastman Kodak Company has in its various branches sensitometers which to them are standards and whose operation and setup is based on technical facts Recently the Kodak Company has completed an instrument designed particularly for motion picture control work and it is this instrument which will be described in this article

The new Eastman Sensitometer is designed especially to meet the needs of the modern motion picture film laboratory and sound department It provides a precise and rapid means of making routine sensitometric tests for the control of development processes and for other purposes bearing on the production of picture and sound prints of the highest quality

The particular advantage of the instrument, aside from its operating simplicity and ruggedness of construction, lies in its precision. It impresses on the film under test an accurately predetermined scale of exposures which may be maintained constant from test to test over long periods of time This exposure scale consists of twenty-one steps produced by exposures equal in illumination and ranging from 1 to 1024 in relative times, each exposure being 1 414 (square root of 2) times as long as the next shorter This constant factorial difference between steps permits the density readings to be spaced at equal intervals along the log E axis, in constructing a density-log exposure curve

The instrument is shown in detail in the accompanying figure This shows a partial vertical section through the optical axis of the instrument "L" represents the standard lamp which is the source of illumination. A selectively absorbing filter, F, is placed in the path of the light coming from the lamp, L, in order to modify its spectral composition to the desired quality. A plane mirror, M, reflects the light at right angles thus illuminating the exposure plane, EP, in which the photographic material is placed during exposure. The rotating cylindrical shutter or drum, D, having 21 exposure slots increasing in length by logarithmic steps from the shortest to the longest, controls the time factor of the exposure incident upon the adjacent steps of the exposure scale The exposure plane is equipped with suitable guides so that two strips of 35 mm motion picture film may be placed in position and exposed simultaneously The platen, PL, when pulled down, serves to hold these strips accurately in the exposure plane during exposure The drum, D, is driven at a constant angular velocity by a synchronous motor, SM This motor runs at 1800 rpm when operated on a 60 cycle alternating current supply line and at 1500 rpm if operated on a 59 cycle alternating current supply line. The drum is connected to the synchronous motor through the reduction gear, G, consisting of a worm and worm wheel having 150 teeth, thus driving the drum at 12 rpm when operating on a 60 cycle line and at 10 rpm on a 50 cycle line When the machine is started by throwing the master switch, MS, the motor drives the drum continuously at a very uniform angular velocity, the desired exposure being made by the operating of the selector shutter, S, which opens while the photographic material is protected from the exposing radiation by the opaque portion of the drum, D, and closes immediately after the series of

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The Sensitometer

Television in Color from Motion Picture Film

by **HERBERT E. IVES**
Bell Telephone Laboratories, New York

IN SPECULATIONS on the possible uses for television, one project which receives considerable attention, partly because of its relative ease of accomplishment, is the transmission of images from motion picture film. It is true that the practical simultaneity of event and viewing, which is the unique offering of television, is lost when the time necessary for photographic development of the film intervenes. Nevertheless it is conceivable that if this delay is small, television from film may still possess such an advantage over the material transportation of film as to give it a real field. A further possibility, more remote, but within the range of legitimate speculation, is that television apparatus may sometime be used to receive, in the home, motion pictures of the sort now offered in the theatres or in home projection outfits. However distant these mergings of the two arts may be, the technical problems presented are pretty clearly defined, and offer interesting features for study.

Among these problems is the transmission of images in color from colored motion picture film. This paper describes a method of accomplishing this, using the receiving apparatus for television in color recently described, and special sending apparatus which utilizes the latest form of colored moving pictures—the ridged film now marketed under the name of Kodacolor.

As an introduction to the method of telecinematography in color using ridged film, it is profitable to outline how the problem could be solved with film in which the colors are incorporated by dyes (e. g., Technicolor), and the three-color transmitting and receiving system recently developed in the Bell Laboratories.[1] This may be done most easily by considering Fig. 1, where the three-color transmitting apparatus is shown in section, with the addition of film handling means. The

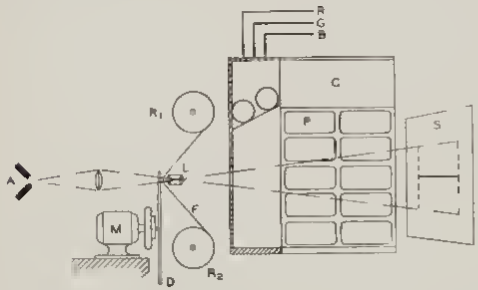


Fig. 1

photoelectric cell cabinet containing three sets of color-sensitive cells with appropriate filters, is indicated at C, from which three communication channels, R, G and B, carry the red, green, and blue signals to the receiving end. At A is the arc lamp, whose light is condensed upon the perforated disk D, which is driven by the synchronous motor M. The lens L projects an image of the disk upon the matte white screen S from which light is reflected back into the photoelectric cells. The film F, as it unwinds from the reel R_1 onto the reel R_2, passes in front of the disk D, and as closely as is practicable to it so that the film and the disk holes are in focus together on S.

If, with the apparatus as just described, the film stands still, with a picture frame exactly filling the field aperture in front of the disk, and the disk rotates at its normal speed for television, the screen S shows a projected image of the film, colored if the film is colored, and capable of being picked up by the photoelectric cells and transmitted, to be received like the image of a colored object by the single disk, three-lamp receiving apparatus, as ordinarily used for this purpose. When the film is moved in order to give a motion picture, there are two alternative forms of scanning disk available, depending on whether the motion of the film is intermittent, as in most cameras and projectors, or continuous. In the first case, a scanning disk must be used with a blank sector corresponding to the period occupied by the shift of the film between frames, as shown in D_1, Fig. 2, and a similar disk must be used at the

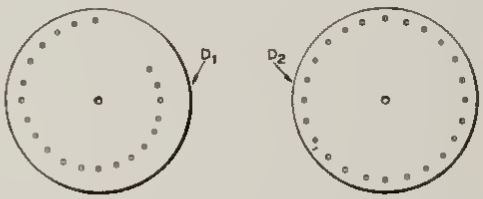


Fig. 2

receiving end also. The use of intermittent exposures is, however, not only inefficient, because of the waste of line-time during the blank period, but is quite unnecessary when the image is analyzed by successive passages of a scanning aperture across the field. Instead of a disk provided with a spiral of holes it is simpler and better to use a disk with the scanning holes arranged in a circle, as shown at D_2, Fig. 2, and to give the film a uniform and continuous motion along the vertical diameter of the disk. When this is done the screen S shows merely a horizontal strip of light (indicated in Fig. 1 by the solid line) but the usual spirally-perforated disk at the receiving end spreads this out into a complete picture.

This method of transmitting colored images from motion picture film, while completely practical, suffers under the disadvantage that it requires an original colored film of a sort which is both expensive and time-consuming to produce. Should television transmission from film become popular it is probable that the chief demand would be for films which would be shown but once, and for showings within a few hours, at most, of the event. Some form of colored film would then be called for which could be prepared quickly and cheaply, and the film process need not be one adapted for making numerous copies.

A form of colored motion picture which very completely meets these requirements is produced by the Kodacolor process.[2] In this the image is black and white, but is distributed into a triple linear mosaic by lenticular ridges on the film. Exposure is made through a lens with three apertures, and pro-

jection is accomplished through a lens similarly equipped with three apertures, covered with red, green, and blue filters The original negative, made into a positive by a process of photographic reversal, is used for projection There is but one film available, but this is all that is necessary for the use in television which we are considering The film is cheap as compared to a film in which the color is added by a dyeing process, and the time required to prepare it for projection is a matter of hours instead of days

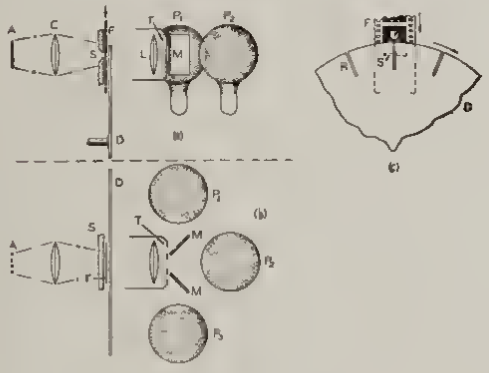


Fig 3

The method of using Kodacolor film may be most comprehensively described by saying that the film is to be projected as though for display upon a screen, but that the three beams of light issuing from the projection lens are directed each into a separate photoelectric cell for television transmission With the details of the apparatus shown in Fig 1 in mind, the Kodacolor film arrangement is readily grasped from Fig 3, where the upper view (a) shows the elevation, the middle view (b) the plan, and (c) shows a detail of the scanning disk and film Starting with the light source A, the light is condensed by the condenser system C on the film F which moves continuously past the slot S and directly behind the disk D The disk is shown as provided with radial slots R, these together with the fixed slot S forming the scanning holes After passing through the film and disk the light is projected as if to a screen by the lens L, in front of which is placed, in the regular projector, the set of red, green, and blue filters T For our purpose both the screen and the filters are dispensed with. After passing through the lens, the light is diverted into three photoelectric cells, P_1, P_2, and P_3, by the mirrors M These cells are all similar, and need not be color-sensitive. The filters are omitted as obviously unnecessary—color is not needed until the signals are received and recombined at the receiving disk where the same apparatus is used as for the reception of signals from original colored projects

The arrangement of apparatus shown in Fig 3 calls for the slot, film, and disk being practically in contact This condition, which must be met if color fringes are to be avoided, is likely to offer some difficulty, since both are moving at high speed. An alternative arrangement, by which the disk and film are separated, is shown in Fig 4 Here the symbols are as in Fig. 3, and the apparatus is the same from the lamp A to the film F The disk is, however, removed to a new position beyond the projection lens L_1, which is supplemented by a short-focus lens L_2 so that an image of the film F, where it lies over slot S, is projected onto the disk A third lens L_3, close to the disk, images the three apertures T onto mirrors M and photoelectric cells P as before By this means the film image may be placed accurately in the plane of the disk and color fringes avoided [1] Additional advantages are that the disk may be made of any convenient size, and that the radial slots to which one is practically driven by constructional difficulties in the very small disk may be replaced by holes as shown at (c)

In describing the apparatus for achieving television in colors by a beam-scanning method[1] emphasis was placed on the fact

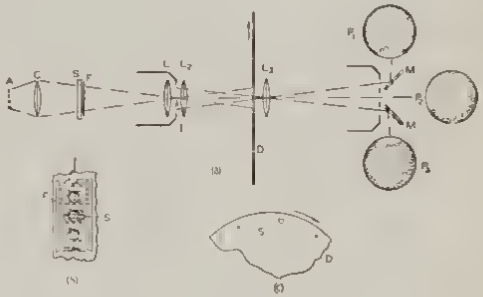


Fig 4

that the same single scanning disk was used at each end as for monochrome work. A similar characteristic holds for the film apparatus here described Either color or monochrome film can be used interchangeably, the latter requiring but one transmission channel If monochrome receiving apparatus only is available when multichrome film is used, it may be received as monochrome, preferably selecting the green channel as giving nearly orthochromatic effects If three-color receiving apparatus is available of the form previously described[2], images from monochrome film may be received on all three (red, green, and blue) lamps together, adjusting their relative intensities to give white or any other desired color for the resulting monochrome image

References

[1] Ives H E "Television in Color by a Beam-Scanning Method," Jour Opt Soc of America 20 (January 1930) No 1, p 11
Photographic Journal (September, 1929) p 402

[2] The disk and film could be similarly separated in the form of apparatus shown in Fig 1 although the necessity is not so apparent

[The above article appears here through the courtesy of The Journal of the Society of Motion Picture Engineers—Editor]

New Natural Color Idea Discovered in England

A NEW process for the production of motion pictures in natural colors and printed on non-inflammable film has been discovered, according to the producers, who have shown samples of the film to the Royal Society, premier scientific body of England It is claimed that the natural color is produced on a film base printed with a foundation, or matrix, consisting of a half-million minute red, green and blue squares to every inch of film Over this foundation, is a coat of highly sensitive emulsion

Consolidation

CONSOLIDATION of the Warner Bros and First National production department, with Darryl Zanuck as executive in charge of both companies, is announced by Jack L Warner. Hal Wallis and Lucien Hubbard will be associate executives, while C Graham Baker heads the scenario department

Hal Hall SAYS

Thanks Mr. Carroll

MORE and more notice is being taken of the Cinetographer by those who write for the public press, which is as it should be The latest film writer to really give the cameraman a break is Harrison Carroll, whose very able work appears in The Los Angeles Evening Herald and many other papers using the Premier Syndicate service We reprint herewith Mr Carroll's remarks

"More recognition is given these days to cameramen, but they still are comparatively unsung heroes

"With the development of the amateur movie cameras, the public is taking the initial step towards correcting this injustice Some of the best known cameramen are receiving as many as 100 fan letters a week, asking technical questions If an unusual effect appears in a picture, it is the signal for a barrage of inquiries

"These range from the simplest to the most complicated matters of technique Double-exposures, fade-ins, cloud effects and backlighting are favorites Another baffling effect to amateurs is what the industry knows as the 'moving dolly shot' Many amateurs walk in towards the photographic subject and cannot understand why their pictures are bumpy. In the studio, of course, evenness is obtained by the camera being bolted to a moving dolly

"John Arnold, president of the American Cinematographers' Society, is a leading figure in the cameramen's battle for recognition 'Why shouldn't we get a credit?' he asks 'Who makes it possible for stars to build reputations for beauty and ability A star can give a rattling good performance, but if she is badly photographed it becomes mediocre in the eyes of the public' "

Service

WHILE listening to some of the very interesting papers being read at the S M P E meeting the other week the thought struck me very forcibly that mighty few people who receive the greatest benefit therefrom appreciate the vast amount of work these engineers do, from an entirely unselfish motive Some of those papers required months of research and preparation But the authors toiled steadily at their work, always with the aim to improve the picture industry Too little credit is given the technical men as a whole This applies to all branches of the technical division Volumes are written about the stars, even about the wardrobe workers—but oh, so little is said about the cameramen, sound engineers, laboratory workers, electrical geniuses and that vast army of men who toil ceaselessly in the research laboratories on experimental work Some may say that the public does not want to read about the technical or scientific But that is not so—witness the fact that the editors of the greatest daily papers place new scientific discoveries on the front page

This and That

A DELIGHTFUL note was sounded the other day by Jack L Warner when he made it known that plans of the Warner Brothers-First National Studios call for continuous production during twelve months of the year No layoffs or enforced vacations there in immediate future Sweet music to many ears

One of the most dignified gentlemen we have met is John Crabtree, genial president of the Society of Motion Picture Engineers It is really an inspiration to see how calm he remains under the most exciting conditions Hope the Society of Motion Picture Engineers makes a regular feature of the exhibit of motion picture equipment Only—someone should see to it that attractive booths are provided for the exhibitors and that the exhibit does not make one think that a moving van just dropped off a load of apparatus . This exhibit could, and should, be one of the big features of the conventions . . Where else would you expect to find such an exhibit we ask you More recognition for cameramen, is the slogan of President John Arnold of the American Society of Cinematographers . with a man like Arnold leading the way, the cinematographers will get it, too watch him . . Wonder what kind of people crowd into houses that show two features at one sitting Even Harold Franklin says now that he believes they tire of them He ought to know, for he gives them to them . . Wonder what studio gatemen think about they always seem to be buried in thought—and self importance

Figure It Out Yourself!

WE REPRINT herewith a news item sent out by the Associated Press. This story speaks for itself and should answer the questions of the vast army of men and women who are afflicted with the yen to come to Hollywood and take a chance at getting into the picture game

WASHINGTON, May 13. (A.P.)—The changed status of the Hollywood extra as a result of the talking films was the subject of a warning today from the Woman's Bureau of the Department of Labor. In a news letter to labor union officials and women's organizations in all the States, the Woman's Bureau laid stress on the present plight of those who once made up the mob scene of the pretalkie "superspectacle."

Of 17,541 extras registered in Hollywood in 1930, the letter says, only 833 averaged one day's work a week or more. Of these ninety-five averaged two and one-half days a week None could claim the record of having daily work.

Their pay is quoted as follows: "13.5 per cent worked for $5 a day; 36.56 per cent for $7.50 a day; 43.23 per cent for $10 a day, and approximately 5.5 per cent in excess of $10 a day. The average daily placement of men for 1930 was 545, of women, 243, of children 19.

"Those who dream dreams about the financial returns from residence in the motion-picture city are invited to ponder the official figures," the Woman's Bureau quotes from a report of the California State Department of Industrial Relations. "These totals, gleaned from experiences, sad and otherwise, should give pause to the fond mother whose ambition is to train her child for a place in the Hollywood sun."

A. S. C. Conducts Fast Film Tests

by **WILLIAM STULL, A. S. C.**

SINCE the introduction of the new Super Sensitive Panchromatic Negative emulsions by the two outstanding manufacturers of motion picture film, the subject of "Fast Film" has been one of paramount interest and importance to the cinematographic world. Accordingly, the American Society of Cinematographers has undertaken a programme of exhaustive research into the practical applications of the new product. A series of exhaustive tests are now under way, treating every phase of the problem, and leading toward a definite series of recommendations from the Society dealing with every phase of fast film practice. They will embody the experience of the industry's leading cinematographers, as gained both from photographic and laboratory tests and from actual production experience, and, as such, will form the final word from the industry's photographic experts upon this new photographic problem. In making and presenting these tests, the Society has enjoyed the fullest cooperation from the authorities of all studios, the film manufacturers, and from the Technicians' Branch of the Academy of Motion Picture Arts and Sciences.

The Fast Film Test programme, when completed, will include complete sensitometric data concerning the films, and photographic tests embracing every problem encountered in production. Among the subjects of these special tests are: Color Rendition, Filtering, Interior Lighting, Special Effects, Lighting Equipment; Makeup; Laboratory Practice, Working Conditions on the Set, with both old and new films (with particular attention paid to the temperature of the set), and many other problems. These tests will be accompanied by representative scenes from current productions which have been photographed on the new films. Accompanying these will be a series of definite recommendations concerning these various matters.

Many of these tests have, at this writing, already been completed. Those that have thus far reached completion have been exhibited before the membership of the American Society of Cinematographers at a series of special meetings which have been held for the purpose, and at which the whole membership participated in informal discussions of the projects, and of the use of Fast Film in general. A preliminary programme of these tests and production scenes, to the extent of more than ten reels, was exhibited at the last meeting of the Technicians' Branch of the Academy, on May 21. An abridged programme has also been exhibited before the Society of Motion Picture Engineers at their recent convention in Hollywood.

The making of these tests was supervised by President John Arnold, and was carried out by various members of the Board of Governors, of the Society's Research Committee, and of the membership at large. Among the cinematographers whose work, either in the form of special tests, or in actual production scenes, has appeared in these programmes so far, have been: Clyde de Vinna, L. William O'Connell, Elmer G. Dyer, Hatto Tappenbeck; Charles Rosher; Merritt B. Gerstad; Hal Rosson; Gordon Avil; John F. Seitz; Dan B. Clark, Victor Milner, Virgil Miller, Karl Struss, Lee Garmes, Roy Hunt, Edward Cronjager; Ernest Palmer, Hal Mohr, and many others. The sensitometric data was compiled by Emery Huse, A.S.C., Gordon Chambers, and others.

A complete report of the findings and recommendations arising from these tests will be published in an early issue of the "American Cinematographer."

Work of R-K-O Technicians Makes Hit in England

"SALLY in Our Alley," first picture turned out by Associated Talking Pictures, Ltd., British unit headed by Basil Dean, for R-K-O release, has been completed and the technical work by three Radio Pictures technicians sent over here has received much praise. The trio includes Bob Martin, chief cameraman, Otto Ludwig, cutter, and Raymond Friedgen, co-director. "Footsteps in the Night" is the second production being made.

●

Secret Processing Device Being Launched in England

A COMPANY has been formed in England under the title of Armoured Films Manufacturing Co., Ltd., with the declared object of "acquiring an exclusive license to armour or strengthen cinematographic films within the British Isles under patents owned by Armoured Films, Ltd." Directors are M. R. Proudlock, F. L. Crilly, I. S. Miller and W. L. Shepherd. The company is closely guarding the nature of the process.

●

To Record African Dialects

AN EXPEDITION, headed by Marcel Grauel, noted scientist, and backed by the Rockefeller Foundation, has left Paris for the African jungle for the purpose of recording on phonograph discs native dialects and music.

Boyle to Sweden

JOHN W. BOYLE, second vice-president of the American Society of Cinematographers, and one of Hollywood's best known cinematographers, left for Sweden on May 24. He will be gone until late next Autumn or early Winter. Mr. Boyle will make a series of scenic pictures covering Sweden, Norway, Denmark, Finland and Lapland. He took with him Ray Fernstrom, whose exploits as one of the ace cameramen of the Paramount Newsreel have made him famous.

●

Round the World

TO GATHER material for a new Technicolor shorts series, known as "Color Magazine of the Screen," Welshay Pictures, Inc., headed by Robert E. Welsh and J. Frank Shea, will shortly send a unit, headed by Duke Green, cameraman, on a 'round-the-world trip. Welsh and Shea are now producing "Beauty Secrets of Hollywood," Technicolor shorts, for Paramount release.

●

New Studio Sound Outfit

OF UNUSUAL interest is the new studio sound recording outfit which is announced in this issue of the Cinematographer by the Radio Installation Company. This outfit is said to provide excellent sound for small independent producers at a figure within the reach of all. The next issue of the Cinematographer will contain a complete story dealing with the details of the new equipment.

Laboratory Department

Conducted by **EMERY HUSE, A. S. C.**

Principles of Sensitometry and Their Practical Application

[This is the second installment of the instructive article on practical application of sensitometry which has been written by Mr. Huse, Technical Editor of this Journal. The first part appeared in the May issue.—H. H.]

IT WOULD be well at this point to give some consideration to the processes of film manufacture. In the preceding article mere mention of the discovery of film base was made, but it is of major interest to know those things which go into the manufacture of film base. The base of all film is a cellulose product and the most necessary and important ingredient in it is cotton. One of the first steps in preparing film base is the washing and drying of the raw cotton, which process takes weeks.

Following this washing process the cotton is treated with a mixture of nitric and sulphuric acids, which process renders the cotton soluble in alcohol. This treatment gives us what is technically known as "cellulose nitrate." This treatment with the two acids, although it does not alter the physical appearance of the original cotton, does, however, change it chemically so that it will be soluble in the various mixtures which would have no effect upon the unnitrated product. Wood alcohol is the chief solvent used in this process. This action again covers a rather long period and the solution which finally results is a relatively clear one having the consistency of honey. This solution, often referred to as "dope," is then poured on the surface of great polished wheels which run consistently night and day. These are the dope casting machines and give film base in sheets which are approximately 40 inches wide and 2000 feet in length. The standard thickness of film base is from .005 to .00525 of an inch, and the degree of accuracy obtained is such that the variation does not exceed .00025. This base is handled in large rolls in a manner similar to which rolls of printing paper are handled, and in this condition is sent to be coated with the light sensitive emulsion.

The photographic emulsion is that light sensitive surface which reacts to the action of light. This emulsion, of course, can be varied in its chemical setup to give the various types of film available on the market—positive, negative, duplicating, and sundry others. The chief element in the emulsion is silver. The bars of silver are dissolved in nitric acid in porcelain dishes and after crystallization pure crystals of silver nitrate are obtained. Other ingredients of the emulsion are potassium iodide, potassium bromide, and gelatin. Gelatin is the substance in which the ingredients of the emulsion are prepared so that this emulsion may be subsequently coated onto the film base. Photographic gelatin is usually prepared from calf skin by soaking the skins in lime water and subsequently extracting with hot water. The gelatin is dissolved in water and the bromide and iodide solutions carefully mixed with it. This mixture, heated to the correct temperature, has added to it the silver nitrate solution. The precipitate of the sensitive silver salt is held in suspension by the gelatin, and because of this the term "emulsion" is derived.

The foregoing has been discussed for the prime purpose of giving the reader some idea of how photographic emulsions are made.

An Historical Review of Sensitometry

Sensitometry literally means a measure of sensitivity. As early as 1848 Claudet devised an instrument for determining the speed of the daguerreotype plate, which instrument was termed a 'photograph meter'." By the aid of this meter one was able to determine the exposure necessary to produce a visible impression on the sensitive material. This method was extremely crude and was not very reliable, but it no doubt laid the foundations for the work which was carried on some years later by two men in England, Hurter and Driffield, who were amateur photographers, but whose prime interest in photography was the production of images which were true to nature. In January, 1891, Ferdinand Hurter states in the opening sentence of his paper, "The Action of Light On the Sensitive Film," that "the function of photography is the production of permanent images of material objects as true to nature as possible." Hurter's use of the words "sensitive film" must not be taken literally, as he used the word film to represent that layer of sensitive material which was coated on a glass plate.

Ferdinand Hurter was a Swiss who began the study of chemistry at an early age, which later led him to be apprenticed to a dyer, in which practical field of chemistry he achieved notable success. He went to England some years later where he eventually became chief chemist and technical adviser of the United Alkali Company.

Vero C. Driffield, an Englishman, though intending to become an engineer, became interested in the practice of photography. His engineering studies, however, led him eventually to join the same firm with which Hurter was connected, and the two men became great friends. Hurter acquired his interest in photography due to Driffield's continual experiments in this general field, and for several years these two men worked together in an attempt to study the underlying principles of the action of light on a light sensitive material. It must be remembered that at this time the collodion plate was practically the only sensitive material at the disposal of the photographer. It was known generally that the photographer had to expose his plate to suit the light, and great difficulty was experienced in the early stages of photography in the estimation of the correct exposure. Naturally, there was much guess work connected with photography of that day. Hurter and Driffield's first problem, as they saw it, was to devise some means of accurately measuring the actinic power of daylight. This work led to the discovery of their actinometer, data on which is incorporated in a specification drawn up by Hurter on the 23rd of April, 1881. For several years the attention of these two men was absorbed by the general subject of actinometers.

In May, 1890, the first joint work of Hurter and Driffield was published under the title "Photochemical Investigations and a New Method of Determination of the Sensitiveness of Photographic Plates." This paper led to a discussion of negative density, opacity, and transparency, means of measuring densities, study of development, gradation, which was referred to by these men as the "ratio of the densities," intensification, and reduction, ending finally with speed determination of sensitive plates.

It was Hurter and Driffield who devised the means of graphically showing the action of light on a photographic emulsion by plotting density produced on a negative against the exposure causing these densities. This constitutes the origin of the so-called H and D curve, which letters refer specifically, of course, to Hurter and Driffield.

New Eastman Sensitometer

(Continued from page 151

slots in the drum have passed the exposing apertures This selector shutter is connected to a one turn mechanism which is driven by a shaft directly connected by a pair of spur gears to the shaft carrying the rotating drum, D The one turn mechanism is actuated by the bottom, B, thus opening the aperture O at the proper instant and closing it again after the desired exposures have been made.

Supplied with this instrument are two calibrated lamps, one for use in exposing positive film and one for negative film The effect current in amperes, the voltage tolerance, and the distance at which the lamp must be set to produce the standard illumination on the exposure plane, are furnished with each lamp.

The current flowing through the filament of the standard lamp is controlled by the rheostat and its value is indicated by the ammeter. A volt meter is also provided in order to detect any lamp deterioration which might affect the constancy of results in precision work

The lamp for positive film is standardized for candlepower when operating at a color temperature of 2600° K Since this quality of illumination is probably somewhat yellower than that used on the average in the practical exposure of positive film, a selectively absorbing filter is provided which raises the color temperature and the radiation incident on the exposure plane to approximately 3000°K The lamp for exposing negative film is standardized for candlepower at 2360°K and with this lamp is used another filter which raises the color temperature of the radiation incident on the exposure plane to approximately 5400°K (mean daylight).

The exposure drum which controls the time factor of the exposure, to which the various areas of the photographic material is subjected, consists of a thin sheet of metal cylindrical in form, one end of which is mounted on and supported by a heavy cast iron wheel fixed directly upon the shaft of the reducing gears In this cylinder are cut a series of 21 openings, each 10 mm. wide, the narrowest of which has a length as measured upon the circumference of the cylinder of 1 mm., while the longest has a length of 1024 mm The length of these openings form a logarithmic series, each one being the square root of two times as long as the adjacent shorter one

The sensitometer is designed for operation on an alternating current line of approximately 110 volts, either 50 or 60 cycles If the line voltage is unsteady, it is desirable to use some form of voltage regulator, which addition can be obtained at relatively little increased cost

The actual operation of the instrument consists first of inserting and connecting the proper lamp The lamp switch is then thrown on after having made proper precaution that the proper filter for that lamp is inserted in the filter holder

The main switch of the instrument is then turned to the ON position.

The lamp current is set at the calibrated value by adjustment of the rheostat knob

After the lamp has reached a steady value of current and no further adjustment is necessary, the film is inserted into the exposure slot and the platen is pressed down on the film until it locks The release button is then pressed

The completion of the exposure is indicated by a bell signal

The foregoing has given a rather brief description of this instrument, but as there is one of these instruments in the local Laboratory of the Eastman Kodak Company, it is available for inspection at any time It will undoubtedly be of interest to state that the price of this instrument complete is $750. f o b Rochester.

Every instrument of this type placed in the motion picture field will be kept thoroughly standardized at all times by the local Kodak Laboratory In this way a photographic standard can be arrived at in the motion picture industry.

A Non-Intermittent Camera

(Continued from page 121

The optical system of this camera—aside from its unique optical shutter—is noteworthy, in that no important part of the camera is moved at all in focusing, and that it is absolutely impossible to photograph a scene with the camera in the focusing position As may be inferred from the foregoing description of the optical shutter-wheel, the aperture is laterally offset from the primary path of film-travel from the magazines This space is utilized in the focusing system, which consists of a prism which slips into place just in front of the aperture, and reflects the image onto a ground-glass focusing screen, from which it is again reflected through a conventional magnifying focusing-tube system to an eyepiece at the rear of the camera. This focusing prism is slipped into place by depressing a small button at the side of the camera, and it is **automatically** thrown clear of the aperture whenever the camera is started

Combined with this unusual focusing arrangement is an absolutely unique device known as the "Exposometer" This is simply a very practical exposure-meter built as an integral part of the camera It consists of a small photo-electric cell into which the light-beam from the lens is reflected, and which actuates a needle upon a dial at the rear of the camera when the lens and shutter are so adjusted as to keep this needle within certain marks upon the dial, the **overall** exposure of the scene will be approximately correct This device should be invaluable when working on location, and amid unfamiliar light-conditions, though it cannot, and does not, of course, attempt to dispense with the expert cinematographer's judgment of highlight and shadow balances, etc

A peculiarity of this type of camera is that, lacking either an intermittent movement of film past the aperture, or a true shutter, it cannot, of itself, produce the effect of a frame-line in its pictures Were its films always to be projected upon similarly constructed, non-intermittent projectors, this would be of no consequence, but as its product must be suited to all types of projection apparatus, an artificial frame-line must be produced This is done by an ingenious masking device incorporated in the matte-box, which is set after focusing and lens-aperture setting has been done, and which brings a pair of horizontal flaps in the matte-box into the proper position to mask off sufficient of the top and bottom of the frame to provide a fair frame-line Incidentally, this arrangement should also be very valuable when working in extreme back-lights out of doors, as a sun-shade

A further interesting feature of this camera is the film-magazine For while it may be used with conventional Mitchell and Multicolor magazines, its own magazine is of a type that though it has not for some time been in use in this country, has many practical advantages. The Moreno-Snyder magazines are, at first sight, of the conventional double type, with separate retorts for exposed and unexposed film But, while these retorts are used in the double unit, each retort is removable, and both are interchangeable, making it possible to greatly reduce the equipment carried on long location trips, and likewise making for great convenience in trick work, multiple-exposures, and camera lap-dissolves

Inasmuch as there is no intermittent movement in this camera, and since the few moving parts are all in continuous motion, the camera is almost perfectly noiseless at normal operating speeds Its range of practical operating speeds, incidentally, is enormous, ranging from a minimum of 8 frames per second to a maximum of more than 300 frames per second (over 1,000 feet per minute), with a possibility of even higher speeds being attainable if adequate driving-motors are used This is, naturally, a considerable advantage for both high-speed and sound photography, while the continuous movement of the film offers obvious advantages to portable, single-film recording systems

(Continued on page 441

New Angles on Fast Film

(Continued from page 13)

film helps us to do it. First, of course, it enables us to deliver a better photographed picture, but that isn't the only thing it enables you to use fewer and smaller lights, and let the actors work more comfortably. And since you are using fewer lights, it enables you to work faster. You know what that means. It minimizes the mechanical element, it means that if you have two successive shots to make, with two different set-ups, but with the same actor, you can shift your set-up quicker, and get those two scenes closer together, while the actor is in the same mood, before his train of thought is broken. That's the important thing—to so minimize the mechanical element that we can enable the actor to work quickly and consecutively, and to give the best interpretation of his part of the story. You've done wonders already with this in your first picture on the new film, but I don't believe that we'll reap the full benefit of it for several months—until the handling of it becomes as completely second nature to you as has been the handling of the old film to which you are accustomed. Once that stage is reached, I don't know what new heights we can't reach!"

And so it went, all along the line. Last of all, I asked myself just how and where this new film aided me in my work. The reactions of the various other members of the company had opened up a new line of thought to me, for I had not previously realized how much the incidental benefits of improved working conditions—which, in comparison to the improved photographic results, seemed minor, to me—might mean to the other members of the company. To the cameraman, if you can work faster and more comfortably, so much the better, but if you can secure better photographic results—there is improvement!

And in addition to working faster and with more comfort and therefore greater efficiency for all concerned, this new film makes possible a tremendous increase in photographic quality. The first purely photographic quality which we think of in connection with this so-called "Fast Film" is its speed, but, properly considered, this is probably the least of its advantages. Unusual overall sensitivity is of little real importance in studio use, except as it enables a reduction in the amount of lighting equipment used, and thus improves the working conditions on the set. But there can be no substitute for improved color-sensitivity. The color sensitivity of this new emulsion is truly a great improvement over that of the old. It is much more uniform, and closer to the sensitivity of the human eye. In other words, colors now photograph more nearly as we see them. Furthermore, this new film has inherently a color correction which approximates somewhat the correction obtained on the old type of film with a K-3 filter. This, however, is a rather haphazard way of putting it, but it gives us an approximate index as to what we can expect. From it we can at least get an idea of where we start: that is, with a film which has the same general chromatic advantages as the older film with the filter stated, but without the overcorrection frequently noticeable. From it we can also at once determine that the K series of filters will be useless on the new emulsion, but that the Aero filters, the various orange, red, and neutral-density filters will be useful, but in degrees, considerably different from what we were accustomed to with the old film. This means that we must make special tests if we are going to work out of doors with the new film. Naturally, there are going to be conservative souls who will prefer to use the old type of film for exteriors, and the new type for interiors, where its advantages in regard to speed, etc., make it almost indispensable. I have no quarrel with such methods, but it seems to me that in temporizing this way they are putting themselves to a vast deal of unnecessary trouble. It seems to me like buying a sixteen-cylinder car, and then cutting out half the motor for city driving, on the grounds that the full power of the sixteen is not needed while driving about town. You are not saving yourself, or your company anything, but, rather, making yourself a great deal of extra trouble in the matter of matching up your photographic quality, your actors' makeups, etc., between the two films.

Besides, to my mind, the greatest advantages of the new film come in exterior work. In the long series of tests which I have made on exteriors with it, I have not yet found any way to make this film give an unpleasantly harsh, contrasty picture. You can over-correct upon it, but you cannot make it go contrasty. And even under the most absurdly impossible filter and exposure combinations, and for night-effects, it will still give a naturally soft picture, with surprisingly luminous shadows, and soft (not chalky!), highlights. Its latitude is a constant source of surprise to me.

Even without filters, it is surprising what the film will do in the way of cutting through the haze of distant landscapes. It will pierce haze that the naked eye will not, yet at the same time keep a nice atmospheric balance. With filters, it is sometimes embarrassing, however, for with these aids it will ruthlessly rip its way into the distance and reveal more than you have bargained for.

Super sensitive film is a most amazing aid to the user of long focus lenses, too. Such lenses have, as most cinematographers know, a disconcerting habit of giving a flat picture at times, unless the exposure and lighting are very accurately managed. But this new film goes a great way to eliminate this trouble. I have made tests with extreme telephoto lenses and this film, panning my camera so that the light through the shot changed from a straight cross light to a perfect back-light, and at all times the shot stood out as crisply and nicely as though it had been done with a normal lens.

The benefits of Super-sensitive film for interior use have been too fully written of to require even a brief mention here, so, to sum up my answer to my own question of the benefits that super-sensitive film can bring the cameraman, I find myself agreeing with Mr. Reisner in his opinion that it is a long time before we cameramen can know the full answer to this question, for the possibilities of the new film are so vast that, for many a long month—or more likely, year—we will all of us be experimenting to find just what the limits of them are. When we at last do find them, we shall have made tremendous strides both artistically and technically in cinematography, and, until then, the new film will give us an added interest in our work, for we shall be learning something about it and about cinematography every day. And, after all, that is what makes our work most interesting, is it not?

●

Aiding the Deaf

TWENTY-TWO additional theatres have had Western Electric Audiphones installed for the hard-of-hearing by Electrical Research Products. They are:

The Jefferson, Beaumont, Texas, the Babcock, Billings, Montana, the Capitol, Dover, Delaware, the Granada, Duluth, Minnesota, the Strand, Fairmont, Minnesota, the Texan, Houston, Texas, the Fox Watson, Salina, Kansas, the Rivoli, La Crosse, Wisconsin; the Knickerbocker, Nashville, Tennessee, the Rivoli, San Benito, Texas, the Texas, Seguin, Texas, the Orpheum, Tulsa, Oklahoma, the Ritz, Tulsa, Oklahoma, the Alcyon, Highland Park, Illinois, the Redondo, Long Beach, California, the Wilshire, Santa Monica, California, the Miller, Wichita, Kansas, the National, Louisville, Kentucky, the Arkansas, Little Rock, Arkansas, the Elks, New Iberia, Louisiana, the Stamford, Stamford, Connecticut, and the Grand Opera House, Dubuque, Iowa.

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Lester Cowan Appointed Academy Executive Secretary



THE DESIGNATION of Lester Cowan as Executive Secretary of the Academy of Motion Picture Arts and Sciences was announced last month This action was taken by the Academy Board of Directors at their last meeting

Mr Cowan has served as Assistant Secretary of the Academy since he became associated with the motion picture industry in 1928 after previous experience in the field of business research Increased responsibilities devolved upon him following the recent resignation of former Secretary Frank Woods to accept a studio position

For the past two months Mr Cowan has been assisting in the negotiations between screen writers and producers leading toward the establishment of standard contracts similar to the Minimum Contract for actors successfully administered by the Academy

When the coming of sound revolutionized the technical aspects of motion picture production, Mr Cowan was active in the program through which basic research was undertaken on behalf of all the studios under the Producers-Technicians Committee of the Academy The aim of this work is to use scientific methods and economic management to increase efficiency and reduce waste in the technical processes of production Through the Academy the various studios cooperate on problems common to all

An educational development last year was the organization of courses in the studios for the education of 900 selected employees of the different departments in the new technique required for sound pictures An authoritative reference volume "Recording Sound for Motion Pictures" is now being published as a continuation of this educational program

The establishment of a Standard Release Print is a recent technical accomplishment of the Bureau Resulting in a smoother show in the theatres and making possible the abandonment of cue sheets and reduction in film mutilation it represents an annual saving of several hundred thousand dollars to the industry

Studies are also being carried on to secure greater efficiency in film processing, studio lighting, and the solution of other immediate studio problems

S. M. P. E. Convention

(Continued from page 11)

A number of improvements are described which assist in giving the desired conditions Among them are a cooling coil for adjusting the temperature of a developer, a new type of rack guide for a developer tank, a compact light lock, a waterproof and corrosion-resisting portable darkroom lamp, and some auxiliaries for the prevention of spots and contamination on film

Improvements in printing room equipment include the addition of a flywheel to a continuous printer to eliminate unevenness in exposure due to variation in the motion of the film during exposure Also, a light change has been equipped to control either of two lamps of different wattage giving in each case exposure values which have exactly equal relationships

Some modifications have been made in rewinding equipment which have for their object the prevention of ground noise and damage to the picture and which result from cinching of badly wound film rolls

A film storage cabinet has been designed for laboratory use which gives an increased degree of protection from fire and water at the same time assisting in the convenient and orderly arrangement of the film

The laboratory symposium continued throughout the afternoon with the following papers in order "A Directional Effect in Film Processing," by J Crabtree, Bell Telephone Laboratories "Straight Line and Toe Records with the Light Valve," by D MacKenzie of ERPI "A Motion Picture Laboratory Sensitometer," by Dr L A Jones of the Eastman Kodak Company "Two Special Sensitometers," by D R White of the DuPont-Pathe Film Manufacturing Company "Electrolytic Regeneration of Motion Picture Fixing Baths," by K Hickman, C R Sanford and W Weyerts of the Eastman Kodak Company "Automatic Control of Electrolytic Recovery Apparatus," by K Hickman of the Eastman Kodak Company C H Dunning of Hollywood, then gave a paper on "The Dunning Process and Process Backgrounds"

Friday again saw numerous papers presented They follow.

"An Apertureless Optical System for Reproducing Sound on Film," by R C Burt, R C Burt Scientific Laboratories, Pasadena, Calif

"Continuous Non-Intermittent Projectors," by A J Holman, East Orange, N J

"Properties of Low-Intensity Reflecting Arc-Projector Carbons," by D B Joy and A C Downes, National Carbon Company, Cleveland, Ohio

"An AC-Operated Sound Motion Picture Reproducing Equipment, by T D Cunningham, R-C-A Victor Company Camden, N J

"Motion Picture Screens, by F M Falge, Beaded Screen Corp, New York, N. Y

"Noise Measurement," by S K Wolf, Electrical Research Products, Inc, New York, N. Y

"Measurements with a Reverberation Meter," by V L Chrisler and W F Snyder, Bureau of Standards, Washington, D C

"The Rapid-Record Oscillograph in Motion Picture Studies," by A M Curtis, C H Rumpel, and T E Shea, Bell Telephone Laboratories, New York, N Y.

"Application of Optical Instruments in the Motion Picture Industry," by I L Nixon, Bausch & Lomb Optical Company, Rochester, N Y

"The Ribbon Microphone," by H F Olson, R-C-A Photophone, Inc, New York, N Y.

"A Moving-Coil Microphone for High-Quality Sound Reproduction," by W C Jones and L W Giles, Bell Telephone Laboratories, New York, N. Y.

(Continued on page 451

..In the Realm of Sound..

New W. E. Microphone

A NEW Western Electric microphone operating on a principle similar to that of the first telephone transmitter used by Alexander Graham Bell is announced by Electrical Research Products for use in recording talking pictures The microphone, already in use in a number of studios and known as the Western Electric Electrodynamic transmitter, possesses many improvements over the condenser type microphone generally used in recording until now The new transmitter is a development of the Bell Telephone Laboratories

Its use eliminates several recording problems, one of which has been the difficulty in hiding the microphone from the view of the camera The new microphone is smaller and its associated amplifier may be located as far as two hundred feet from the microphone making it much easier to hide from the view of the camera The amplifier for the condenser microphone was built as an integral part of the microphone housing and made it extremely difficult to camouflage in many sets

Other advantages of the new transmitter are that it is less affected by dust and moisture and need not be kept in a desiccator It is unaffected by changes in temperature and barometric pressure It is a further contribution in noiseless recording since its associated amplifier is quieter in operation The transmission characteristics of the transmitter are superior and distortion caused by cavity resonance has been practically eliminated thus increasing quality and reality in recording Increased volume is obtained since the transmitter and associated amplifier give from 10 to 15 decibels more overall gain than the condenser transmitter and amplifier

The principle on which the transmitter operates is the inverse of that employed in the well known Western Electric 555-W receiver used in the Western Electric Sound System In this receiver or any dynamic loud speaker the magnet system is so constructed as to produce a circular air gap across which extends a radial magnetic field, between the inner pole and the surrounding outer pole In this air gap is situated a thin circular coil which is attached to the diaphragm If a sound current is passed through this coil, the electrodynamic reaction between the current and the field will cause the coil to execute axial vibrations corresponding to the modulations of the sound current

Through the medium of the diaphragm and horn, or baffle, these vibrations reproduce the original sound This action can be readily reversed, if a sound falls on the diaphragm causing the diaphragm and coil to vibrate, there will be generated in the coil a small alternating voltage which corresponds to the impinging sound waves This is the way in which the electro-dynamic transmitter operates and indicates the origin of its name

The construction of the new transmitter is very similar to that of the 555-W receiver, except that instead of an electromagnet a permanent magnet of cobalt steel is used There is, of course, no horn or baffle The diaphragm is of thin duralumin The coil is of edge-worn aluminum ribbon The diaphragm is protected by means of a disc of perforated sheet metal mounted in front of it and this in turn is covered by a thin piece of black silk

It is noteworthy that so far as is known this is the first time that the electro-dynamic principle has been used commercially in a transmitter, although in the first years of telephony Alexander Graham Bell employed a closely related principle by using one structure of the ordinary electromagnetic telephone receiver for transmitting

Sound Being Installed in Chinese Theatres

SEVERAL installations of motion picture sound equipment are in course of erection at present in China At Harbin, Manchuria, and the Portuguese Colony of Macoa the first theatres to be equipped with sound apparatus are now in process Other installations are being made at Canton, Amoy and Peiping

It is estimated that there are at present a total of 50 theatres throughout China equipped with sound apparatus Of this number, 35 are American equipment The remaining 10 or 15 installations are reported to be of the French disc type (Pathe-Orient), being utilized by the cheaper Chinese theatres in and about the Shanghai area

The new King's theatre at Hong Kong was opened recently, making a most favorable addition to the cinema houses in that city

●

AC-Operated Equipment Put Out by Masterphone

A NEW and completely alternating current operated equipment, requiring no motor generator, A ' or "B" batteries battery charger or pre-amplifier, has been announced as now ready for distribution by the Masterphone Sound Corp , of Seattle

The new Masterphone AC-operated sound reproducing sound equipment, it is said, will entirely eliminate the causes of pre-amplification troubles, distortion, microphonic and rushing noises

A completely centralized control panel simplifies operation, the company claims

●

New Baby Spot Offered by Cinema Equipment Co.

INTRODUCTION of a new baby spot which may be used for headlighting, lighting novelties, statuary, lobby display, spotting an orchestra, etc , has been announced by the Chicago Cinema Equipment Co , manufacturers of projection apparatus, orchestra equipment and stage lighting

The new spot is of the round type construction, mounted on a rectangular base, 5 inches by 7½ inches, and may be set on any flat object in any position or it may be screwed to the wall It is fitted with an Edison base receptacle for 250-400 watt Mazda lamp, 4½-inch condenser, and is furnished complete with four metal color frames and color

●

Voltage Control Unit

A MANUALLY operated line voltage control unit designed to illuminate fluctuations in the input power to the amplifier, for use on 50/60 cycle circuits and consisting of an adjustable auto, has been placed on the market by the American Transformer Co of Newark

Voltage may be maintained it is said, at 110 or 115 volts and the unit can be used where the existing supply is between 90 and 130 volts The device, known as the AmerTran Power control, Type T-750, is housed in a sheet metal box designed for wall mounting Overall depth is 9 inches and requires wall space of 6¼ x 11¼ inches A 3-inch diameter flush meter and a 2¼-inch knob are used to control the unit

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Bell & Howell Announce Chicago Building Expansion

THE IMMEDIATE addition of a third story to the Bell & Howell Company's engineering building in Chicago is announced by J. H. McNabb, president of the company. This building was erected only about two years ago but is already outgrown.

The engineering building is devoted exclusively to experimental and development work, and the additional space, totaling 17,000 square feet will be given over to experimentation on talking picture apparatus. Outstanding features will be a completely equipped sound laboratory and a sound projection studio with stage.

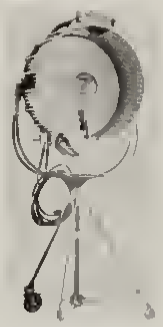
The construction of the new addition will be reinforced concrete flat slab with exterior walls of face brick with stone trim and steel sash, to match the present building. The roof will be insulated. Interior partitions will be mainly of glazed tile. The addition will be 153x112 feet and will be thirteen feet high.

The engineering building is separate and distinct from the company's main offices and factory which are likewise located in Chicago.

Work has been begun on the company's new two-story branch sales, service, and engineering building in Hollywood, and the expansion program of the Bell & Howell Company is surely convincing proof of its confidence in the business future of the country in general and of the motion picture industry in particular.

16 Will Be Made in East

OUT of the 65 or 70 features to be produced by Paramount for the 1931-32 season, 16 will be made at the New York studio. This is the same number scheduled by the plant for the current year.



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Super Sensitive Film and the Still Man

(Continued from page 9)

Another feature of the new film, too, which aids in this improvement in perspective, is the uncanny way in which it seems to reach into the shadows, without burning up the highlights. This gives us natural shadows, such as our eyes see—shadows which are definitely recognizable as shadows, but which are not on that account mere pools of black. Except in the most unusual cases, our eyes see shadows as areas of lesser luminosity, but still perceive the detail in them, so does the new film.

This makes it vastly easier to work in extreme low-key lightings, particularly for still photographs, as we can get our natural low-key effects without sacrificing either shadow detail or highlights.

I have found these same qualities to be equally advantageous in portraiture. The speed and color correction are, of course, obviously beneficial; and this same extreme latitude proves an even greater benefit, as it gives a greater degree of roundness, and a snap and sparkle that were heretofore missing, particularly where a moderately soft, flattish lighting was employed.

But pictures speak louder than words, and the accompanying pictures can tell the story much better themselves. The one thing that they cannot tell is the technical facts of their making. Figure 1 was made on the old-type stock, with the set lit for the Super Sensitive film which Mr. Mohr was using. The exposure was 1 second, at F 8. Figure 2 was made from a slightly different angle, but with the same lighting set-up, Super Sensitive cut film was used, and the exposure was 1/5 second at F 8. Figure 3, a portrait of Marion Schilling, was made on the old-type Panchromatic stock; the lighting was from two 1,000 Watt floodlights, with two silks on each, and one 400 Watt back light, with one oiled frost on it; the exposure was 2 seconds at F 8. Figure 4 was made on the new Super Sensitive Panchromatic stock, with the same subject and lighting set-up; the exposure was 1/5 second at F 8. The fifth illustration, that of Mr. Mohr and myself, was made on the new Super Sensitive stock with only one 1,000 Watt light, the lens closed down to F 16, and an exposure of 1/5 second. Both of the pictures on the old type film were forced, both in development of the negative and in printing, in order to get the best possible prints from negatives which were none too good.

●

No Widies For Germany

GERMAN producers will have no color nor wide film in their coming season product, according to Dr. H. L. Boehm, the only man to come from Germany to Hollywood for the Convention of the Society of Motion Picture Engineers.

Dr. Boehm, who represents the German Society of Photographic Research, International Educational Film Institute of the League of Nations, and the Association of German Educational Film Producers, says that the German producers have enough troubles, including sound, without adding either color or wide film. He did say that UFA is experimenting with a color process.

●

New British Sound Firm Enters Production Field

BRITONE SOUND STUDIOS, Ltd., England, a new registered company with a new variable area system of sound recording, has started studio operations under the general management of Kessler Howes. Both features and shorts will be made, with the feature output amounting to about six pictures a year.

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Amateur Movie Making

by WILLIAM STULL, A. S. C.

LAST NIGHT at dinner, the conversation swung to amateur movies. My host—a confirmed professional globe-trotter and amateur cinematographer—turned to me with this remark. "You know, Stull, amateur or not, when it comes to scenes with people in them, either as long-shots or closeups, I'm not the least bit ashamed of the results I get, but when it comes to landscapes—particularly distant ones—I'm an awful duffer. I almost always overexpose them, and, whatever I do, I can't help getting them pretty hazy and flat. What's the matter, anyway?"

Proper Exposure in Landscapes.

It was not the first time that this question had been asked me, for Mr. Blank's trouble is one he shares with many another expert 16mm worker. The answer is that he has not learned that his eye and his film (even Panchromatic) do not see things the same way. He overexposes his picture because he forgets that, although to his eye a landscape appears to reflect **less** light than a normal close scene, in reality it reflects **far more**, just as a large reflector will reflect a greater quantity of light than a small one will. The safest way to secure correct exposure for such scenes is to use one of the exposure-meters which actually measure the light reflected from the subject (like the Drem "Cinephot" or the Bell & Howell "Photometer")—and to **trust the meter implicitly.** There will be times when the exposure indicated by the meter will seem unbelievably small, when every instinct will cry out that you can't possibly get a decent exposure under such circumstances—that is the time to remember that the scientists responsible for your meter know far more about photography than you do—and to follow their recommendation devoutly. If you don't the overexposed film you will get back from the laboratory should be enough to convince you of the error of your ways!

But not all of us have such meters. Some of us may feel that the ten or fifteen dollars which such things cost can be better spent elsewhere— and quite forget that if the meter were to keep us from ruining only two or three rolls of film per year they would be paying for themselves, with more than sufficient interest to boot. Some of us may feel that we have had enough experience to worry through without the extra bother of using a meter—and forget that although we may be able to estimate the correct exposure for ninety-nine scenes out of every hundred, that hundredth scene which we go astray on is almost invariably an important, irreplaceable one. And sometimes, those of us who do have meters forget them when we most need them. In cases such as these, the only thing to do is to remember that we cannot trust to either our eyes or our instincts, and that the only thing to do is to reduce the exposure to a point considerably beyond the stop which our instinct tells us will give us an underexposed film.

Cutting Out the Haze.

But, even when landscapes are correctly exposed, we still will frequently find that our picture is hazy and flat. This, again, is due to the fact that our eyes and our films do not see things the same way. To our eyes, the region of greatest brilliancy is in the yellows, to the film, it is usually somewhere among the blues, exactly where depending upon the make of the film, and whether it is Pan or Ortho.

Now, even on days that are quite clear, we often find that our pictures show the distance as shrouded in a sort of hazy mist. This is because the air—except in the desert or at high altitudes, actually contains a considerable quantity of mist, or, to put it scientifically, suspended water-vapor. These suspended particles of water-vapor are practically transparent to the longer waves of light (the yellows, reds, browns, etc., which form the larger proportion of the **visual** image), but they scatter the blues, violets, ultra-violets and, sometimes, the greens—which are the important photographic rays. Therefore, although a distant scene may seem clear and distinct to the eye, it may (and usually does) seem quite misty to the film, which obediently gives us an accurate picture of what it sees. So we must trick the film into seeing the view more nearly as our eyes do. In other words, we must absorb this scattered blue and violet light—and most particularly the invisible ultra-violet light—if we are to get the good, clear picture that we want.

To gain this end we must first of all use a film which is sensitive to the remaining colors of the spectrum, as well as to the blues and violets. Therefore, **Panchromatic film, of course.**

But "Pan" is still sensitive to the blues and violets—and therefore to this blue-violet haze which we are trying to eliminate. So we must in some way absorb this objectionable haze (which is there, whether we can see it or not) before we let

(Continued on page 36)



An excellent example of results obtained by use of a filter. Left, no filter used; right, same scene under same conditions but a Ramstein-Optochrome filter was used.

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Upper left, Paimpol potato market. Upper right, hasty retreat of man from bad bargain. Left center, Guingamp market. Center, a house at Paimpol. Right center, Guingamp street on "Pardon" day. Lower left, Paimpol general market. Lower right, Guingamp cattle market.

Babbling About Brittany

by **LAWRENCE GRANT**

This is the third article of an unusually interesting series which Mr Grant has written for this magazine The next will appear in the July issue—Editor's Note

I HAD heard much of Paimpol and the Ile de Brehat Paimpol because it was the place where Pierre Loti's famous tragic story "Le Pecheur d'Islande" was laid, the Ile de Brehat because of its wild North Brittany beauty

From Paimpol the fishing fleet sets out once a year to the icy seas of Newfoundland, and the shores of Iceland When they return the famous 'Pardon" of the fishermen takes place in gratitude for the safe return of those who have been on either of these very dangerous trips

The Paimpol people are extraordinarily industrious, for no sooner have they come home from the fishing expeditions and disposed of the fish, than they change their occupation and become ardent agriculturists Growing potatoes and other vegetables, working hard at this until just before the time comes round again for them to get their ships ready for the next departure to the distant seas

Thus there is not only a fine fish market and tremendous amount of business done with Paris and London, but there is a potato market in which vast quantities of Paimpol new potatoes are packed and sent off to the same destinations

But the rain is frequent on this north coast, and while it is good for agriculture, it is bad for photography, and here on market day it was raining all the time. However you have to make your pictures, rain or shine, you cannot make a "location call, weather permitting" there as you can in a picture studio, the markets and "Pardons" go on whatever the weather, and you must "shoot" or lose the picture

I made friends with a potato dealer here, he had visited some of his London customers one year, and had taken the opportunity to see Aldershot and Chiselhurst, the latter place he told me was "where Mrs Napoleon lived" It took me some time to realize that he was serious, and that this was his republican way of referring to the late French Empress Eugenie, who was a great friend of Queen Victoria and lived for many years in England after the last Revolution

I spent a few days at Guingamp before coming to Paimpol trying to hire a cart to drive me around to neighboring places for eight or ten days I finally settled with a man for horse and "victoria" for 17 francs a day But the next day the cocher who was employed to drive it, (cochon would be a better word) said the proprietor was not paying him enough out of it, and refused to go, unless I consented to pay twenty francs a day I said I would not do that, for I found that it was not so much the money that was upsetting him, but the idea of being away from the comforts of the hovel he called his home, and the hag he called his wife It was an unthinkable hardship, particularly as he would be likely to have a different bed each night with linen, nasty cold clean linen, to sleep in It made him shudder to think of it, so it was "off"

Then I arranged with a Ford car for 30 francs a day and started off for Paimpol, but when I got back to Guingamp all ready for the trip, the Ford man refused to carry out the bargain Why? He did not know, but he could not go Maddening people, at times these French peasants

Paimpol is situated rather far from the open sea, at the head of an estuary, so if you want a seaside resort for summer vacationing you go down to Kerity, where small houses and cabins can be rented and bathing is good

After making friends in the market and listening to political talk of the Customs officials, who said that so many relatives of local politicians had to be taken care of and given Customs jobs, that the money provided for this service was split up into so many portions that no one got enough to make an honest living from his salary, so what could you do but get a little "on the side," I went on to the "Ile de Brehat," a wild, rocky and picturesque place Do not miss it The arrival of an "American," for that is what they thought me, was soon noised around the little place from Mairie to market, and from market to the Inn

I lunched with the local lights, the Mayor and the Rotarians of the Island, and for half a dollar we had

RESTAURANT GASPARD
Ile de Brehat
Dejeuner
*Homard a la Americain
Rognons aux Truffes
Gigot d'agneau roti
Pommes de terre. Salade
Fraises aux Kirche.
Entremets
Demi tasse
Vin rouge Cidre Vin blanc
Prix Frcs 2 50
*This item in my special honor

In Brittany we shall see many large monoliths, and clusters of other large stones, called by various names Here is one the size of which can be computed by the girl who stands guard under it We will go into this matter in a later talk, but in the meantime, I printed this here because I wish you to notice the resemblance of the Stone to the Church tower—even if to nothing else They are, in fact, the origin of all towers and spires Their own origin goes back to the dawn of the world, the beginning of man, and his worship of that which created him

There is another thing I would like to draw your attention to in Brittany, that is, the importance of Women, and their activity in every field of work You do not have to take my word for it Just look at these pictures as we go along together Look at those which are illustrating this chapter Women, under the umbrellas in the Paimpol potato market, women in the market where the tents are, women in the market square of Guingamp, women in the street of the Fair at Guingamp, women almost entirely even in the cattle market, and women, five of them, inside the gates of the potato market, and a solitary man leaving with a jaded expression as one who has just been "bested" in a business deal

So having spent some time in viewing the beauties of the island, but more in convivial lapping up of "Ile cocktail" vin rouge, benedictine, and cafe cognac with cigars in company of the Mayor and other sober, respectable and important people, I returned to Paimpol, and having given very positive instructions that I must be called at 5 A M to catch the 6 o'clock train back to Guingamp, I retired sleepily to bed

And they called me at 5 45!

Yet nevertheless I was down at the station a few minutes before the train left, and it left on time! How did I do it? I do not know Everyone got to work on, or for me Loud shoutings in the inn yard jingling of harness while the voiture

was being prepared for me Clattering, chattering, commotion everywhere Throwing all false prudery aside and all false modesty to the four winds of heaven the young daughter of the Inn, and her still young and lovely mother came into my room and literally dressed and packed me, while another lovely chambermaid brought me the inevitable cafe with crescents, and in ten minutes I found I had been dressed and packed and drunk warm coffee, and said "Good-bye" and was seated with a crescent in each hand and all my luggage and cameras aboard en route for the station

And all this time I had never noticed anything except three very charming women were intent on getting me ready and that ' Honi soit qui mal y pense" was a good motto

Anyhow there I was at the station at 5 55 and there was the station master Did I say station master? No He was everything there was As usual ' pendant la guerre" the station was being run, and run well by one individual! Like the late Will Cressy, that splendid Vaudevillian, in "Town Hall Tonight," when he informed a visiting artist that he was everything from Manager to Call Boy at the local "opry house" — ' Whatever there is—I am Whatever I'm not—there isn't "

Well, our Guingamp station master was old, very old, but he was all there was, and this train starting was going to be done according to Hoyle, or in other words, to the credit of the "Chemins-de-fer de-l'Etat-de-Normandie, Bretagne, et lignes diverses en correspondance" in particular, and of France during war time in general, if it killed him

First he unlocked the station doors and let us into the booking hall, then he locked the door again The door leading to the platform being already locked, he had us safely here and could deal with us at leisure, or as much leisure as five minutes to starting time gave him He went into the booking office and sold us our tickets Then he snapped down the little window, ran back to the booking hall, weighed our baggage and gave us the checks for it Then he hurried back to a private door to the platform, and like a quick change artist, appeared at the door, unlocked it, examined and punched the tickets to see that there had been no error committed by the man who had sold them, (himself) then he locked the door again Forgetting the characters of ticket seller, baggage master, and ticket inspector, he became now the station master He herded us to the train For a moment he became the porter and flung our baggage into the baggage car Back to the station master, he slammed every door along the train shouting the French equivalent to "All aboard for Guingamp and places South," gave a last inspecting look, and then the signal to start! 6 A M !!

And the signal to start was by the usual French method A toot or two on an instrument between a child's toy trumpet and an old fashioned powder horn, a blow on a whistle as a concession to the twentieth century, and the engine, making more noise than the Century Limited, announced to Paimpol and the waiting world that **the** event was happening, the train was leaving on time, on its perilous journey for that distant and important spot, Guingamp, at the hair raising speed of twelve miles per hour,

However even twelve miles an hour got us back to Guingamp in time for that great "Pardon "

Now we talk frequently of drinking vin rouge and other more "forte" liquids, but aside from being pleasant and exhilarating they are safe, which water in Brittany most decidedly is **not.** To drink it may be fatal During your visit I cannot too strongly urge you to listen to Julian Eltinge's advice occurring in one of his songs "Don't go **near** the water daughter " It carries typhoid risks in every sip for strangers, or it **may** do so, for the wells in the smaller places are frequently in amazing proximity to the farm yard and the drain (if any), or the drain is near the river and the river flows just behind the kitchen, and so—

Yet local people can drink and be immune, though I have seen a modern separator separating cream from milk, pigs food being prepared, and a large wooden bucket full of manure, all in the same cottage room, and the wooden bucket had every evidence of being used at other times for flour Yet their caps, their faces, their linen and their cottages are spotless

I remember after doing two hours work in a farm yard with my cinema camera, the farmer's wife asked me if I would have some refreshment I said I would take a bowl of cider. She brought it, in a big bowl I started to drink Immediately all the baby pigs I had been photographing came squeaking and jostling round me I asked Why? She did not know, unless perhaps it was because she usually brought them out their food in the bowl I was drinking from!

Nevertheless everything is picturesque, even if to be so, makes it sometimes impracticable, and sometimes not so sanitary For instance Guingamp Famous for its Market day, its church of ' Notre Dame de Bons Secours" with its great Virgin dressed in costly robes, which is carried round the town at the great Feast of Notre Dame (Note that **every** little place in Brittany is famous, even if it is famous for not being known at all by casual visitors, and there are some we will visit that are famous just for that) Well, in Guingamp on Market day the Narrow Rue Notre Dame is practically closed to all but pedestrian traffic, with boutiques, (market stalls) blocking the side walks, and in the great square a mass of jabbering, bargaining, jollying crowd of farmers, their wives, and their hens and their calves and their pigs, and their "truck garden" produce, and their butter—and please do not ask me to describe Brittany butter—it must be eaten to be believed —delicious!

Under the trees round the corner another lot of women haggling over milch cows and calves with proddings and appraisals and accusations of extortionate prices they are asking compared to those they got at St Brieuc last week, and what bad weather for the crops "Very unusual for the time of year" (and I wonder **where** have I heard **that** before), and how fodder is running low, and hog feed running high, and daughter is going to marry a man from St Malo, a **Frenchman** and a city man, so probably no good, and "Voulez vous prendre quelquechose a boire?" And the reply **"Now** you're talking" or breton words to that effect, and into the estaminet they go When will they come—or be dragged—out?

It is a never to be forgotten scene, the procession of the Pardon of Notre Dame de Bons Secours, for it is a Marche aux Flambeaux at night Bonfires in the square—torches carried by everyone—relics under golden canopies—carried shoulder high by stalwart costumed peasants, or lovely girls in pure white—Sacred banners—the Great Virgin in robes rivalling a Queen's at a coronation—and the choir—and the crowd and the priests in gorgeous copes—preceded by thurifers swinging great smoking censers And singing—by a chorus perhaps ten thousand strong

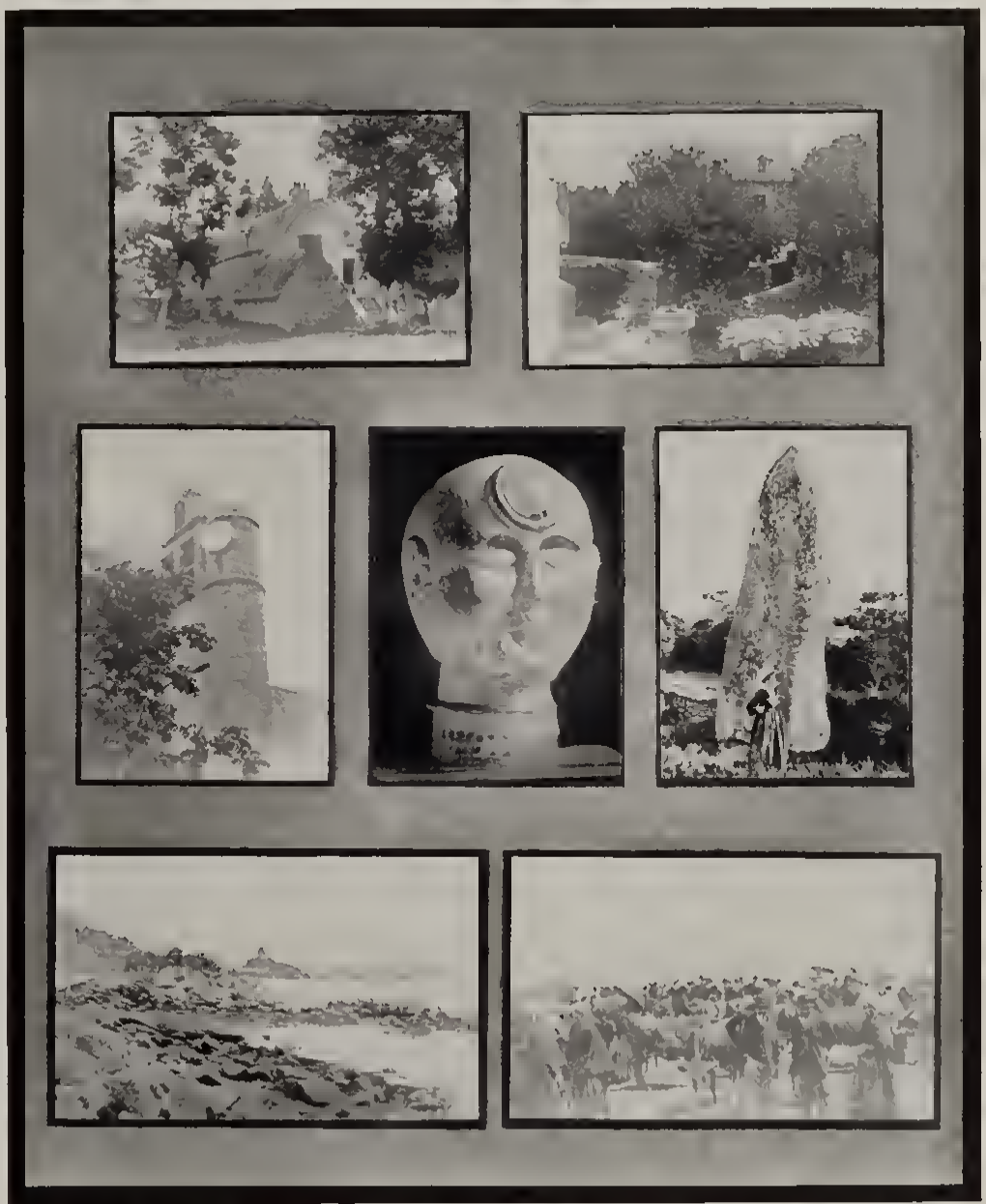
And then a carousal into the early hours of dawn

A great night

And no questions asked A great day, and comes but once a year and Youth must be served, and you can dabble in a holy fountain on the road home and purify the hand, perhaps, that has offended, and tell your beads in the cart as you jog along, and all is forgiven, but such a night can never be forgotten

They have another Virgin there, called the Black Virgin, and she used to be the one that was carried in procession, but observing that it always rained when she came out, they now leave her in her place in the Church and carry the pale one The black one is not really black, for if you examine her you will find her quite pink in the corners of her eyes and wrinkles of her nose The black is only the dust of ages, I think

(Continued on page 39)



Upper left, City Hall Upper right, typical, narrow, picturesque road Left center, church tower Center, St Herve Right center, one of the countless Menhirs of Brittany (N D Photo) Lower left, breakwater of rocky coast Isle de Brehat Lower right, cattle market and Pardon, Menez Bre.

Amateur Movie Making

(Continued from page 30)

the rest of the picture record itself on the film To do this, we interpose light filters—bits of colored glass or gelatine—between the subject and the film Photographic light filters are made in a variety of colors, but the ones which we want are those particular yellow ones which will absorb the ultra-violet rays entirely, and much of the violet and blue ones, as well There are quite a few filters of different manufacture which will do this, but the standard ones are the Wratten 'K" series, which come in several shades, and are known as the K-1, the K-1½, the K-2, and K-3 As they remove the powerful blue and violet rays, without supplying anything to take their places, they naturally increase the exposure needed, so that the less powerful rays which remain can do their work They have been scientifically measured, however, and the exact exposure increase for each filter is known For the sake of convenience, this is called the "filter (or multiplying) factor" For the K-1, this factor is 1½, which means that the normal exposure (as given by your meter) must be multiplied by 1½ For the K-1½, the factor is 2, for the K-2, it is 3, and for the K-3, it is 4½ The exact filter to use depends, naturally, upon the degree of haze present, and the nature and distance of the scene For most distant landscapes, the K-2 and K-3 are the best, the latter especially For closer scenes, and for more distant ones on exceptionally clear days, the lighter filters are more suitable

On the other hand, for extreme telephoto work—that is, with lenses of six inch focal length or over—the best landscapes are secured with an even deeper and sharper filter. Telephoto shots are usually characterized by an exaggerated flatness at any time, and for distant landscapes a very sharp-cutting filter will help to correct this Therefore for such use the Wratten "G' filter is by far the best It is of deeper, more orange hue than the K-3, but its multiplying factor is much the same, varying from 4½ to 5. In use with reversal film, where a slight underexposure is far preferable to a slight over-exposure, the factor had best be taken as 5. Of course, too, with telephoto lenses (or with any fast cine lens, for that matter) it is important that a good, deep lens hood be used at all time, to shield the lens, not only from direct sunlight, but from all light that is not actually being used to make the picture Most cine lenses come equipped with fairly adequate lens-hoods, but you can hardly go wrong by making an additional hood for your telephoto and speed lenses

In the Mountains

Mountain work presents some peculiar problems of its own As you ascend to higher altitudes, the air becomes steadily clearer, requiring less and less exposure A good rule to follow is to give normal exposures below the 4,000 foot level from there to around 5,000 feet, ¾ normal, above 5,000 feet, ½ normal, and so on Besides this, the clearer atmosphere requires lighter filters, if the proper balance between sky, trees, rocks, and snow is to be maintained For most mountain landscapes a K-1 or K-1½ will usually be satisfactory, though if there is much color in the foreground a K-2 is often advisable For telephoto work in the mountains, the K-2 is also all that is necessary, as the "G" filter otherwise used is too strong, unless there is a bit of haze or fog in the distances.

That Bald-headed Sky

Another thing that all too frequently detracts from amateur landscape cinematography is the nakedness of the skies The professional has long since learned that, where landscapes are concerned, clouds make the picture, accordingly, he avoids, whenever possible, photographing a landscape if an unclouded sky is to figure in it And if professional film companies are willing to delay production until they can get some beautiful clouds to float across the tops of their landscape shots, the amateur, who is not shackled to an overhead expense of many hundreds or thousands of dollars per day, can certainly do likewise A few pretty clouds can make a real picture out of an otherwise ordinary landscape, while a "bald-headed" sky can ruin the best view

Clouds of course, being in the intense blue field of the sky, naturally require filtering if they are to be photographed to the best advantage The exact filter to use is obviously dependent upon the atmospheric conditions and the type of clouds, as well, of course, as the relation of the clouds to the sun In general, it is probably best to use a good, heavy filter, like a K-3, although this will sometimes make the sky seem darker than is strictly pleasing There are also times when it is wise to use a graduated filter, which ranges from a deep yellow at the top, to clear glass at the bottom, thereby equalizing between the sky and foreground But, whatever filters you use, don't neglect your skies, if you want to get the best landscapes possible! It may often mean waiting a few hours or even days, but it also means the difference between a scene that you will be proud of and one which will remain either a lasting disgrace, or an encumbrance on your cutting-room floor.

●

Screen of Metal Mesh Placed On the Market

AFTER several demonstrations with good results, a new type metal mesh projection screen, under the trade name of "Lustro-Pearl" and designed especially for high grade theatres, has been placed on the market by the Mandalian Manufacturing Co, North Attleboro, Mass.

The advanced features claimed for this new screen include A surface treated with the purest of known chemicals, entirely free from gloss, eliminating all distortion common to ordinary types

Highest reflection factor known to reputable light testing laboratories, effecting a considerable saving of electric current

Constructed so as to distribute sound very clearly and uniformly throughout the entire theatre

Can be washed with hot water and soft brush without injury to its surface

Affords a clear view of any picture from any angle of observation, eliminating eye strain or discomfort to patrons

Surface may be sprayed periodically for many years, and for this purpose, the company plans to loan for a period of ten years a complete up-to-date spraying outfit with each screen purchased, and furnish chemical solutions from time to time for resurfacing this type screen.

Its high reflective qualities bring out objects in a manner which might be termed the nearest approach to three dimensional pictures, the company claims

R-K-O Proctor's 58th Street, New York, is among the first houses to install this new type screen

●

Foreign Sales Increase

PRELIMINARY figures compiled by the motion picture division of the Bureau of Foreign and Domestic Commerce reveal the fact that approximately $5,000,000 00 worth of American made motion picture equipment was sold abroad during the year 1930 This is an increase of $4,000,000 00 over the foreign sales for 1929, and gives a fair idea of the tremendous sales possibilities for our equipment there are in foreign fields Among the outstanding items were the following- 2,160 35 mm projectors, 946 35 mm cameras, 1,667 cameras of less than 35 mm and 1,634 16 mm projectors

●

Two R-K-O Features in Color

R-K-O will make both The Bird of Paradise' and Condoning Wives" entirely by the recently improved Technicolor process, it is announced Paramount also is to make 'Rose of the Rancho" under the process

"What Projection Lamp Should I Use?"

A discussion of the characteristics of the different types of Projection Lamps available for 16 mm. projectors.

by **R. FAWN MITCHELL**
Technical Service—Bell & Howell Co

(NOTE —As representative of a Company selling projectors equipped with different lamps this article is offered in an endeavor to present the facts concerning the merits and otherwise of the different lamps in a strictly impartial manner —R F M)

THE AVERAGE amateur movie maker has available to him quite a large selection of projection lamps From this selection, he has to choose one or rather a projector using one (or possibly two) of these lamps with which to project his pictures

Naturally, the choice of the lamp or lamps used depends on the work being done If long throws of brilliant quality are needed, then the most powerful projector available is obviously indicated When the projector is only going to be used in the home to show a picture three feet by four feet at the most, then the more powerful projector is not necessary

On the other hand, if the movie maker concerned is a Kodacolor fan, the more powerful light is desirable on account of the great absorption of light by the filters of the Kodacolor lens

Between these extremes, there is a "middle ground," as it were, where the choice is not so definitely indicated In any case, an analysis of the theoretical as well as of the practical characteristics involved, should be of great interest,

In a projection optical system, one of the chief requirements is that the projection lens be uniformly filled with light emanating from a light source (the lamp filament) To accomplish this the condensers must be so designed that an image of the filament is produced within the projection lens This image must be of sufficient size to fill the lens (The image of the filament is focused actually at the nodal plane of admission of the projection lens)

In carbon arc lamps we deal with a small spot of light, the image of which, in order to fill the projection lens, must be magnified a great number of times However, since the intensity of an arc is very high, a very bright image is produced within the projection lens in spite of the magnification

With the Tungsten filament, the case is different, Tungsten cannot be brought to as high a degree of incandescence as a carbon arc Consequently Tungsten filament produces a light source which is nowhere near equal in intensity to the arc and therefore does not permit of the same enlargement of the image at the projection lens To make up for this deficiency, a filament must be made larger in area in order that it will not be necessary to enlarge its image excessively In other words, the larger the source of a given intensity, the greater the light intensity within the lens

The accompanying sketches give a comparison of the factors involved in using a 20 volt, 250 watt lamp and the 375 watt, 75 volt lamp Figure 1 illustrates the using of a 20 volt lamp, which has but two filaments It will be seen that the image of these two filaments will have to be enlarged many times in order to fill the lens with light

Figure 2 illustrates the condition existing when a 75 volt lamp is used This lamp has six filaments so that they do not have to be magnified anywhere near as much in order to fill the lens It is obvious from this that the six filament lamp should concentrate far more light than the 20 volt lamp Of course the 20 volt 250 watt filament, because it is designed to carry 12 5 amperes of current as against the 5 amperes carried by the 50 volt 250 watt and the 75 volt 375 watt filament, is considerably heavier and can be operated at a higher temperature, consequently it produces a slightly whiter light than the 50 volt 250 watt and the 75 volt 375 watt filaments. However, even allowing for this difference, it is easy to see that the 375 watt lamp still concentrates more light in the projection lens than the 20 volt

Because of this color difference, in making visual comparisons it appears that the light of the 20 volt, 250 watt lamp is more intense than that of the 50 volt, 250 watt Actually the light flux of the former is equal to that of the latter when measured with a photo-cell foot candle meter The same meter shows that the 75 volt, 375 watt lamp produces 41 percent greater light intensity than either the 20 volt, 250 watt or the 50 volt, 250 watt lamp

Following is an accurate comparison of the various types of lamps, from which the foregoing percentages have been obtained

Voltage	Wattage		Foot Candles
75	375	Lamp	190
50	250	"	135
20	250	"	135
50	200	"	115
30	165	"	100

An optical bench was set up in such a manner that the lamp position was fixed The lamp was aligned so that it was focused on a screen 4¾" high and broad in proportion (about 6") The arrangement was such that lamps could be inserted in the receptacle so that they would be exactly in the same position and aligned so that the filaments were correctly centered The same lens and condenser set-up was used with all lamps and the voltage was set each time with a

(Continued on page 40)

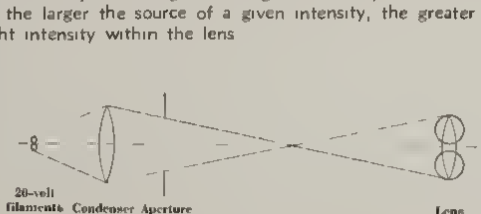


Figure 1

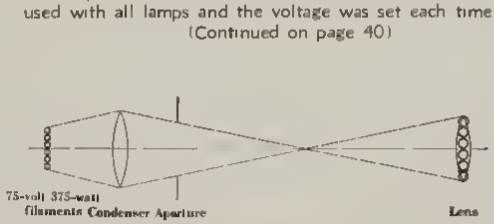
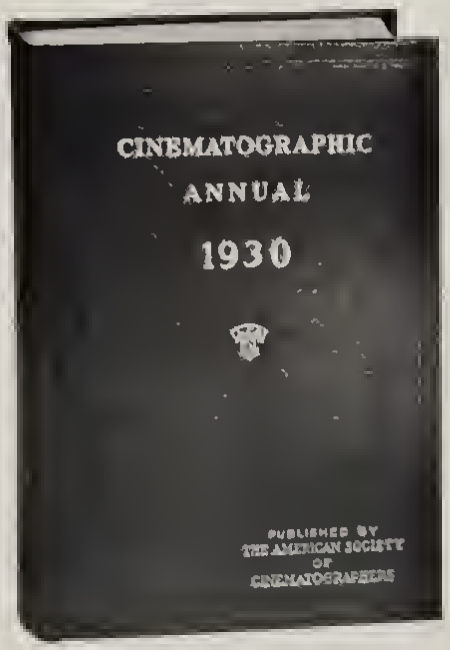


Figure 2

The Last Word

for Professionals or Amateurs..*the*

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Babbling About Brittany

(Continued from page 33)

About 20,000 people flock into the town for this occasion It is a great sight Bonnets, and bonnets, and bonnets from every district within reach A sight worth going far to see and hear

I should never have gone to Menez Bre had it not been for my potato merchant friend, probably should never have heard of it, for it is a bare hill, and a tiny chapel, that is all

But they have a great and powerful Saint on this hill, and once a year they combine his feast with a great cattle market My friend said he was going to the cattle market, so I went with him I feel sure I was the only stranger that had attended this Fair and Festival for many years

We left the train at Belle Ile Begard and then we had to walk up hill to the very top Once there we found this bit of a church, dedicated to St Herve, but "you must never judge the power of a Saint by the size of his shrine" and this one is simply all powerful

This hill top was a great Druid gathering place before Christianity came, and is haunted by two poets, Guenc'hlan a Druid, and St Herve, a Christian, and they have a lovely place to fight it out, for on a moonlight night it is too perfect It is the actual top of the hill, and the view is uninterrupted for the complete circle You can turn slowly round and see for miles in every direction

Herve was the son of a Christian poet, and a Druid Poetess he is excellent for eye trouble and all headaches

I do not know whether they still do it, but the principal services here was held by the Priest alone at midnight once a year for all the souls who had died during that year without the last offices of the church. He summons all the devils who have them in charge, bids them release any poor spirit they may be holding, gives each devil a grain of corn, and bids them begone Gruesome task Alone at midnight on the top of a spooky hill, counting out grains of corn to devils

They have a very pleasant euphemism for pigs hereabouts They call them "Chevaliers de Rohan" This man actually lived and was known everywhere for vile manners, especially at table

I could not find out why the farmers should drive all their cattle up this hill at Menez Bre to bargain and haggle, and buy and sell, and bring up all the tents and the food, and the drink, when all this could be done far better at Belle Ile Begard where there is a station. It is true that they keep the feast of St Herve at the same time, making a yearly market day for the cattle, and a gay festival for the Saint, but they could do that down at Begard if they wished There must be some terric force in religious tradition that brings them all up that hill to that tiny church, for it is not a great cathedral where a wonderful ceremony is held, but a wee place where only very few people can get in at a time

But there is kept the relic of this saint, and up that hill you must go that day if you wish to obtain his benefits or make a good cattle bargain

There is no floor to this chapel, only the hard earth, but it has quite a solid tower, and in the tower a nice little private room, or rooms, and after conducting a few masses during the morning, the jolly little cure, to whom I had been presented by my potato merchant friend, who seemed to know and be known by everyone everywhere, guided this merchant, another choice companion, a gendarme and me up to this upper chamber, where we found a marvelous lunch had been prepared for us by a comely peasant woman, the Cure's housekeeper, for even a celibate priest must have a woman around to look after his material needs in his house

That has always seemed to me one of the difficulties and problems of celibacy, you cannot have a wife, yet you have to have a housekeeper I do not see how even St Anthony could stand that sort of temptation for ever day after day, and still keep his reputation

However if you pay a prolonged visit to Brittany you learn a lot about the Catholic religion Its rigidity and its elasticity; its obvious wisdom and its apparent follies, but above all its deep understanding of human nature and human needs, and while you may still be a heretic when you leave, you will have a vast respect for something which has survived for centuries, held the imagination of the people, and brings such hope and comfort as these peasants get from their very human friends, the local Priests

Father O'Flynn, the famous Irish Priest of the long ago is duplicated in almost every village, and though I do not think I quote quite correctly, as I met these men I was always thinking of the chorus of that old song

"Father O'Flynn, ye've a wonderful way wi' ye,
All the young children are anxious to play wi' ye,
All the old women are waitin' to pray wi' ye,
Father O'Flynn ve're a **wonderful** man"

●

H. T. Cowling, A. S. C.



ONE of the busiest men attending the S M P. E convention in Hollywood last month was Herford T. Cowling, treasurer of the S M P E, member of the American Society of Cinematographers, and a member of the Board of Editors of this journal

It was Mr. Cowling's first visit to Hollywood in three years, and in the few days he was here he tried to shake hands with every one of his old friends, as well as confer with the editor of the Cinematographer, assist in the business of the convention, and sign the necessary checks that a treasurer has to sign

Mr Cowling is an executive in the Eastman Educational Films, Inc For many years he was one of the picture industry's most famous globe trotters, having made pictures in practically every country in the world As he was leaving he declared that he was really glad to start back to Rochester, for the lure of California was fast getting into his blood and he was afraid if he stayed much longer he would want to become an adopted son again



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Filmo Topics

BELL & HOWELL'S interesting monthly magazine Filmo Topics, contains much of value to the amateur in the June issue This magazine may be secured free by writing Bell & Howell at 1801 Larchmont Avenue, Chicago, Ill The contents for June follow

Movie Treasure Hunts Have a definite object picture on your vacation this year.

Backward Boys A 16 mm comedy made entirely in reverse action.

The A, B, C of Filmo Camera Lenses Lens markings explained for the beginner

Suggestions to Kodacolor Users Getting the best results in the natural color films you take this summer

Titling Your Films No 9 Moving Picture Backgrounds

X-Ray Your Golf Stroke About the movie method of learning golf.

The Filmo Projector's Cooling System Explaining how air helps project pictures.

What Projection Lamp to Use

(Continued from page 37)

carefully calibrated Voltmeter and the illumination measured with the same Standard Photo-Electric Cell The figures given are relative only, and give the proportion of the light emission between the various lamps The actual foot candle rating on the screen will vary with each individual situation, but the proportions will be the same In other words, this test represents the actual measurement of the comparative illumination of the lamps under test conditions as measured by the type of Photometer accepted and used by illuminating engineers

This test, conducted under such rigid conditions, obviates and discounts tests made in the field, where slight variations in voltage or other conditions introduces variant factors that are not always recognized at first sight

Note also that a visual test is confusing because of the slight color difference When projecting the 20 volt 250 watt lamp alongside of the 75 volt 375 watt lamp, the former will appear gray in comparison with the latter.

Regarding current consumption, the following can be said Disregarding transformer losses, the 20 volt lamp consumes 250 watts of current The 50 volt 250 watt lamp operated on 110 volts in series with a resistance, requires 550 watts of current, 300 watts of which is dissipated through the resistance

The 75 volt 375 watt lamp also consumes 550 watts at 110 volts, however, only 175 watts are dissipated through the resistance. The foregoing indicates that the 50 volt and 75 volt lamps consume approximately twice the current required by the 20 volt lamp This, however, is offset by the advantage of being able to operate both the 50 and 75 volt lamps either on direct or alternating current To arrange a 20 volt 250 watt lamp so that it could be operated on both alternating and direct current, the transformer would have to be replaced with a series rheostat which would have to be of impractically large size Under this arrangement the lamp would require 1375 watts of current at 110 volts

Tests have also been conducted to determine the lamp life of the 375 watt lamps Six stock projectors were set running, with the lamps adjusted to exactly 75 volts, to give the same conditions as in actual use The projectors were started and stopped at frequent intervals to still further reproduce the conditions met with in ordinary practice

Several sets of tests, conducted in this manner, showed the average life of the 375 watt lamp as 48½ hours—(projection hours, note!). This is equivalent to six months to two years' use from the average owner Several lamps lasted 60 and 70 hours—inasmuch as the 250 watt lamps are only rated 50 lamp hours by the manufacturer, the new lamp gives a very good account of itself

The main objection to the new lamp is that it generates more heat than other lamps, so a very efficient cooling system is necessary. For the same reason, it is advisable not to run the projector slower than 16 pictures per second when using this lamp

For long throws, the greatest illumination is needed and the same applies to Kodacolor projection

Reference to Figures 1 and 2 will show why the 375 watt lamp is better for Kodacolor, from another viewpoint Kodacolor necessitates the illumination being very carefully equalized over the entire area of the filter For this reason, the 20 volt 250 watt lamp is less suitable for Kodacolor, than the 50 volt 250 watt lamp—even though they both give the same amount of light Due to the greater number of filaments in the 375 watt lamp, the light concentrated on the Kodacolor filter is better than that obtainable with the 50 watt lamp. This, in addition to the extra illumination, makes it ideal for that purpose

It is hoped that this analysis of the characteristics of the different projection lamps available, will be found helpful.

Fore!



Joe Novak with Filmo usas camera to make slow motion picturas of his golf pupil for instruction purposes

New Correctoscope

EVERY Cinematographer knows how important it is that the distance be correctly set on the camera lens, also the importance of proper exposure

Hugo Meyer have announced their new Correctoscope, a precision optical instrument for determining the distance of your subject from the camera and for obtaining the correct exposure stop

Since these two settings for your camera lens are so important in cinematography, it is obvious that this new Correctoscope will be a most necessary accessory for the Cinematographer. It eliminates guess work and is very easy to use. It puts focusing and exposure under direct control of your eye.

Correctoscope is provided with a specially constructed, very critical, focusing lens, in a focusing mount and with diaphragm control, both calibrated just like your camera lens The image, which is reflected thru a prism, is viewed by your eye thru a highly corrected magnifying eyepiece, whose focus is adjustable to your particular eye conditions

You see the image **right-side up**

To obtain the distance you simply turn the focusing ring of Correctoscope lens until the subject is sharp The scale on the lens indicates the distance

To obtain proper exposure you snap into place a special light filter and turn the diaphragm ring down until the details in the darkest part of your picture are eliminated The scale shows the lens stop required

This is all there is to it.

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The image is very brilliant and sharply defined. Since the lens is very critical, the in or out-of-focus appearance of the image is determined quickly and accurately

Correctoscope is furnished for Victor, Filmo, or Cine Kodak Cameras, and is slipped on or off the camera instantly; a set screw holds it on the camera when it is being used, and a slight turn of this disengages the instrument so that you can take it off the camera

Correctoscope is the only instrument of its kind, combining the means for obtaining these two most important factors There are no tables to read or calculations to make Everything is done visually

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Yankee Lubric is not a grease and will not streak or spot, the company claims

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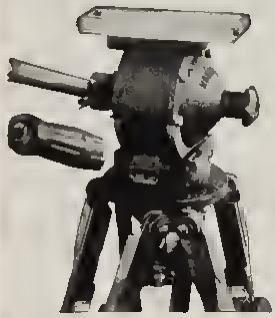
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Victor Announces Results of Comparative Tests with 16 M M Projection Lamps

THE RAPIDLY increasing demand for 16 m m projectors capable of serving both the auditorium and small room requirements of schools and churches has made LIGHT a factor of major importance in the construction of the better projection equipment

The lamp manufacturers have accomplished remarkable things in developing lamps to meet this demand Due, however, to the limitations imposed by the small size of the T-10 bulb and of the optical accessories in the projectors, it appears that their creations in the low voltage, concentrated-filament type of lamp leave little, if any, room for major improvements

Of these lamps, there are three that are contending for first place as being the best general purpose lamp for the majority of maximum illumination requirements

These are the 165 Watt-30 Volt MAZDA, the 250 Watt-20 Volt MAZDA, and the 375 Watt-75 Volt which does not carry the Mazda Stamp That the Watt-Volt specifications on these lamps are somewhat confusing to the average layman is evidenced by the fact that "165 Watt-30 Volts" sounds like a comparatively low rating, whereas the lamp is actually equivalent in power to 605 WATTS in a 110 VOLT lamp



A Victor Animatophone in use in a classroom These machines are gaining favor daily in the schools

The Victor Animatograph Corporation, Davenport, Iowa, stands alone in offering a projector equipment in which any one or all of these high intensity lamps may be used interchangeably The Model 3G Victor Cine'-Projector has a built-in transformer to accommodate the 250 Watt-20 Volt Lamp A change-over system of wiring permits the transformer to be cut out By plugging-in with the No 11 Victor lamp rheostat, the 250 Watt-50 Volt, the 165 Watt-30 Volt and the 375 Watt-75 Volt Lamps may all be used in the same projector

S G Rose, Vice President and Sales Manager of the Victor Corporation, says, "It is up to the purchaser to select whichever lamp he wants We, however, make recommendations and suggestions with the view to enabling the user to get the most satisfactory service possible from his projector"

"Inasmuch as our equipment is not limited to the use of any one of these lamps, but embraces them all, we feel that our findings in the matter can be accepted as being strictly impartial"

Briefly, the experience of the Victor Animatograph Corporation has been this

The 250 Watt-20 Volt has proved itself a highly satisfactory lamp. When operated at full efficiency, it gives an extremely white and powerful light. It is not unusual to secure a 10 to 12 foot picture with it at 100 feet. The fact that it can be satisfactorily used only with fixed resistance, however, does not permit it to deliver its full volume of illumination on all 100 to 120 volt line currents. Also, the type of resistance that has proved most satisfactory for this lamp limits its use to alternating 50 or 60 cycle current.

The 375 Watt-75 Volt Lamp gives a very creditable performance when new. The Victor tests, however, reveal that loss of efficiency is rapid. Bulb discoloration takes place comparatively early as a result of Tungsten being thrown off and deposited on the glass. The volume of illumination at the beginning is great, but it is not as white and brilliant as that of the 250 Watt-20 Volt or the 165 Watt-30 Volt Lamps. Life of the lamp is also somewhat less than the 50-hour rating given other standard T-10 Projection lamps by the lamp manufacturers.

The results of the Victor tests seem to indicate that the 165 Watt-30 Volt is, generally speaking, the best lamp for all maximum illumination requirements. The filament, in size and shape, appears to be ideal for 16 m/m projection. Constant use does not impair its efficiency. It throws off a very brilliant, bright white light from first to last. Variations in line current do not affect its operation. The rheostat resistance with which it is used is "variable," with the result that the lamp can be operated at maximum efficiency on any 100 to 120-volt alternating or direct current line. For this reason the 165 Watt-30 Volt Lamp frequently excels even the 250 Watt-20 Volt in light volume. A brilliant 12 foot picture was thrown 105 feet with this lamp in a recent test.

It is accordingly apparent from these tests that the prospective purchaser need not worry about the ability of the better 16 m/m projectors to provide sufficient light for all ordinary school and church requirements, for it has been found that schools and churches do not generally have a projection throw in excess of 60 to 70 feet.

●

36% of German Houses Now Wired for Sound

THIRTY-SIX per cent of the total number of theatres in Germany are now wired for sound. This represents 52 per cent of the aggregate seating capacity.

Total of 715 houses have sound-on-film reproducers. Theatres using disc systems number 1,189. Cinemas wired in Berlin total 210, and those in the provinces number 1,694.

●

Russia Slates 50 Talkers; To Make Own Reproducers

THE Stalin government plans to produce 50 talking pictures in 1931 for reproduction by means of a nationally made apparatus now being developed by Professors Ramanoff, Tager and Charine.

Already, it is pointed out, there are 112 talking pictures devoted to public health.

●

National Fire Board Okays Revised Film Safety Code

COMPLETE revision of the standard regulations governing measures for fire prevention in the handling of motion picture film in film exchanges, laboratories, studios and theatres was approved at the 35th annual meeting of the National Fire Protection Ass'n held last week in Toronto, and the report will come before the executive committee next month for final ratification.

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A Non-Intermittent Camera

(Continued from page 21)

The continuous movement has, as well, many advantages to the trick-cameraman, particularly in the making of projected backgrounds, in the making of which camera and projector need not be synchronized as must a conventional camera. Its surprising steadiness at high speeds is also highly advantageous in this type of work.

As has been stated before, this camera can be used interchangeably for black-and-white, bi-pack, and tri-pack color photography. It will take any standard cinematographic lens from 40mm. focal length on, special lenses of an equivalent focus of less than 40mm. are now being prepared by several of the leading domestic and foreign optical firms, so that, ere long, even this slight restriction on the flexibility of the camera will be removed.

And so another impossibility has been made a fact; in the opinion of this writer, Senor Moreno and his associates deserve great praise for the way in which they have attacked this problem, as well as for the surprising degree of success which they have already attained. They have explored a new realm, and, though they have met and will yet meet with technical troubles and difficulties, and find, as all manufacturers do, more than a few unforseen "bugs" in their creation, they have come the greatest part of the way in making an utter impossibility a proven fact.

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Hold Everything!



Even the ball players are making movies. Here is Babe Herman, slugging Brooklyn outfielder, shooting Al Lopez with his Cine-Kodak.

B. & H. Talkies for Home

"HOME talkies are right at hand," states J. H. McNabb, president of the Bell & Howell Company, "and soon all over the country people will be enjoying talking pictures in their own living rooms—an advance which has been attained much earlier than was anticipated by even the most sanguine.

"Already our company is offering over 200 16 mm. sound subjects, and it has in sight approximately 25 releases monthly for the next twelve months. Of the sound subjects now listed, practically two-thirds are especially suitable for home use, and the same percentage will undoubtedly obtain in the releases scheduled for the coming year."

A number of well-known producers, including Pathe, Universal, and UFA, have been quick to see the possibilities of the home talkie market, and have made professional subjects available for 16 mm. sound reproduction, it is pointed out by Mr. McNabb.

The Bell & Howell Company, in addition to a fine selection of UFA Educational talkies excellent for home showing, is announcing over 20 Grantland Rice Sportlights, fully as many Aesop's Fables subjects, and such features as "Barnum Was Right," and 'The Leatherneck"—all of course, for 16 mm. sound reproduction.

"A number of the progressive photographic retail dealers are already building up comprehensive sound libraries for renting to owners of home reproducers," says Mr. McNabb, "and some dealers have even announced a rental plan by which people who are giving a social function at home can rent both reproducing outfit and subjects at a reasonable fee."

●

Amateur Club for Frisco

AS WE go to press we receive a note from our good friend George Young of "Camera Craft" magazine, saying that a San Francisco Amateur Motion Picture Club is in the process of formation in that city. The organization meeting was slated for May 26.

An attractive program was outlined for the meeting. It included greetings from W. A. Jones, president of the Greater Oakland Amateur Motion Picture Club, "Incident," a picture made by the Princeton Under-graduate Movie Club, a talk on making movies at the South Pole by Joseph T. Rucker, who with Vander Veer, made that remarkable picture, "With Byrd at the South Pole", a talk by Sigismund Blumann, brilliant editor of 'Camera Craft", and the organization business. We certainly wish the new club much success.—H. H.

Volume Control Device

ENTERPRISE Optical Manufacturing Co, Chicago, is said to have developed a new light valve volume control for the Motiograph sound projector equipment The light control, it is declared, is a means of regulating the sound level by controlling the amount of light falling upon the light sensitive surface of the photoelectric cell, thereby controlling the amount of electrons emitted from the cell

●

Cleveland Firm to Make Industrials in Color

TRI-STATE Motion Picture Co, Cleveland, is now equipped to make industrial films in motion, sound and color The addition of color in making industrials is new, and Jack Flanagan, president of Tri-State, says that its use has stimulated the interest in industrials

●

Series of Fishing Shorts Planned by Mack Sennett

"CANNIBALS of the Deep" is the title of a fishing series of six single reel pictures which Mack Sennett will produce for Educational release during the new season He personally made the shots on fishing trips

●

S. M. P. E. Convention

(Continued from page 26)

"Air Conditioning Systems," by A H Simonds, Carrier Engineering Corp., Los Angeles, Calif.

"Frequency Control of Photophone Sound Track," by D J. Tilton, R-K-O Studios, Inc, Culver City, Calif

"New 35-mm Portable Sound Equipment," by H Griffin, International Projector Corp, New York, N. Y

"The Decibel in the Motion Picture Industry," by V C Hall, Eastman Kodak Company, Rochester, N J.

"Recent Contributions to Light-Valve Technic," by O O Ceccarini, Metro-Goldwyn-Mayer Studios, Culver City, Calif.

"New Newsreel Camera," by J L Spence, Akeley Camera, Inc, New York, N. Y

"Storage and Handling of Motion Picture Film," by E W Fowler, National Board of Fire Underwriters, New York, N Y., and L B Newell, New York Fire Insurance Rating Organization, New York, N. Y.

"Protecting the Theatre Against the Fire Peril," by R B. Dickson, Pyrene Manufacturing Company, Newark, N J.

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Victor Speed Indicator

SPEED determination and control is an absolutely essential factor in talking motion picture reproduction Incorrect or inconstant speed would naturally prove fatal to good reproduction

On the **Animatophone** 16 m/m Talking Projector, manufactured by Victor Animatograph Corporation, Davenport, Iowa, a very clever method is employed for determining the proper operating speed for either 33 1/3 or 78 R P M. Records A small prism is located at the left of the **Animatophone** speed lever When the projector is operating at the exact speed for which the speed lever is set, the governor blade falls into a position that permits only a narrow pulsating slit of light to penetrate the prism At any other than the correct speed, the position of the governor blade either permits light to fall over the entire surface of the prism or closes entirely This speed adjustment need, of course, be made only when the **Animatophone** is first set up for operation The operating speeds of the **Animatophone** are automatically controlled

A film speed of 24 pictures per second is required for 33 1/3 R P. M Records 20 8 pictures for 78 R P M. Records, and 16 pictures for silent films By means of the **Animatophone** Speed Lever the mechanism may be adjusted for each of these essential speeds

An entirely new idea in the way of speed governors is employed This is a simple electro-pneumatic device consisting of a metal blade or vane, against which air is forced from the cooling fan Any variation in the air pressure causes the blade to function in such a manner as to make or break the electrical contact This provides perfect uniformity of speed, regardless of fluctuations in the line current

These unique features of the **Animatophone** make speed determination and control simple matters for the amateur operator, and eliminate the necessity of attempting to determine the correct speed by ear.

Photoflash Holder

NATIONAL CARBON COMPANY has just announced a Photoflash lamp holder as an addition to its popular line of Eveready products

The tube and fittings are of heavy gauge nickel plated brass, and is designed to operate on two Eveready No 950 unit cells The bottom cap has a convenient ring hanger.

It is equipped with a substantial nickel plated lamp socket, mounted at right angles, and has a spring loaded push button in convenient operating position The large aluminum reflector is nickel plated outside and matte finished inside It is scientifically designed for maximum diffusion of light, and will hold one, two or three Photoflash bulbs Both the inside and the outside of the reflector are lacquered to protect the finish

Glenn R. Kershner
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Screenographs

CAMERAMEN GET FAN LETTERS ON UNUSUAL EFFECTS

By HARRISON CARROLL

(Copyright, 1931, Premier Syndicate)

More recognition is given these days to cameramen, but they still are comparatively unsung heroes.

With the development of the amateur movie cameras, the public is taking the initial step towards correcting this injustice. Some of the best known cameramen are receiving as many as 100 fan letters a week, asking technical questions. If an unusual effect appears in a picture, it is the signal for a barrage of inquiries.

These range from the simplest to the most complicated matters of technique. Double-exposures, fade-ins, cloud effects and back-lighting are favorites. Another baffling effect to amateurs is what the industry knows as the "moving dolly shot." Many amateurs walk in towards the photographic subject and cannot understand why their pictures are bumpy. In the studio, of course, evenness is obtained by the camera being bolted to a moving dolly.

John Arnold, president of the American Cinematographers' Society, is a leading figure in the cameramen's battle for recognition. "Why shouldn't we get credit?" he asks. "Who makes it possible for stars to build reputations for beauty and ability. A star can give a rattling good performance, but if she is badly photographed it becomes mediocre in the eyes of the public."

* * *

Los Angeles Evening Herald
May 12, 1931

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